Factors Influencing Water-pipe Tobacco Smoking among Egyptian Youth and the Role of Fear of Negative Evaluation

Sahar Raafat Abu Gharara

PhD

2020

Factors Influencing Water-pipe Tobacco Smoking among Egyptian Youth Including the Moderating Role of Fear of Negative Evaluation

Sahar Raafat Abu Gharara

A commentary submitted in partial fulfilment of the requirements of the

University of Northumbria at Newcastle

for the degree of

Doctor of Philosophy

Research undertaken in the Newcastle Business School

2020

AUTHOR'S DECLARATION

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges opinions, ideas and contributions from the work of others.

Any ethical clearance for the research presented in this thesis has been approved. Approval has been sought and granted by the Faculty Ethics Committee / University Ethics Committee / external committee on 11th of May, 2017.

I declare that the Word Count of this Thesis is 66,659 words.

Name: Sahar Raafat Abu Gharara

Signature:

Date: 1st May, 2020

ACKNOWLEDGEMENT

This PhD journey has truly been a life-changing experience, and I would have never been able to complete this journey without the love, support and guidance that I have received from many people.

I would like to express my deepest gratitude to my supervisory team: Prof. Fraser McLeay who was there all along, believing in me and always making time for me. Thank you for making every step of this PhD easier and less stressful. Dr. Vignesh Yoganathan, who continuously offered help and guidance even before becoming my supervisor. You saved me from statistical hell, and for that I am always grateful. And Dr. Matthew Sutherland, who never hesitated to offer any support and direction whenever it was needed. My deepest appreciation goes to the three of you for making the best supervision team any PhD student could ask for. I also want to thank Dr. Ahmed El Samadicy, my internal supervisor at the AASTMT, for his help and support during this PhD. Thank you for the coffee, biscuits and sweets you always had prepared for my visits.

I cannot express my gratitude to my family, who have always had my back. To Mommy, for being my role model and an icon of strength and love; and Pappy, for always being there for me and for always picking me up whenever I had one of my meltdowns. I hope I made you proud. This PhD journey couldn't have been completed without the love I received from my sisters, Soha and Sarah. Soha, thank you for believing in me when I didn't have the strength to believe in myself. And Sarah, thank you for your love, and for showering me with feel-good gifts all the time. I owe you both.

I was lucky to start this PhD with Hashim, my husband and supporter, without whose constant care and understanding I would have never reached the end of this journey. Thank you for being there during the bad nights, for pushing me to pursue my dreams, and for all the Papa Johns pizza and Netflix nights. I love you to bits.

My gratitude goes to all of my best friends who were there for me from the very beginning: Mahinaz, Didi, Amy, Aline, Sarah, Nashwa, Samar, Ahmed, Ozzie, Ahmad and Mohamed. Thank you for bearing with me throughout those PhD years, supporting me all the way. I promise to make it up to you.

LIST OF ABBREVIATIONS

Full Title	Abbreviations
Central Agency for Public Mobilization and Statistics	CAPMAS
Center for Disease Control	CDC
Eastern Mediterranean Region	EMR
Framework Convention on Tobacco Control	FCTC
Fear of Negative Evaluation	FNE
General Agreement on Trade in Services	GATS
Health Belief Model	HBM
Integrative Model of Behavioural Prediction	IMBP
Intrinsic Religious Motivation Scale	IRMS
Middle East and North Africa	MENA
Non-Governmental Organisations	NGOs
National Health Interview Survey	NHIS
National Survey on Drug Use and Health	NSDUH
Occupied Palestinian Territory	OPT
Perceived Behavioural Control	PBC
Social Cognitive Theory	SCT
Social Learning Theory	SLT
Stages of Change	SoC
Sexually Transmitted Diseases	STDs
Technology, Entertainment and Design	TEDx
Theory of Planned Behaviour	TPB
Theory of Reasoned Actions	TRA
Trans-Theoretical Model	TTM
Value-Belief-Norm	VBN
World Health Organization	WHO
Water-pipe Tobacco Smoking	WTS

ABSTRACT

Water-pipe tobacco smoking (WTS) is contributing to global social and health problems and has been associated with diseases such as lung cancer, respiratory illness and periodontal disease. However, efforts to curb WTS are being hampered by the limited understanding of the factors that influence smoking for consumers who may not always be aware of the hazardous effects. Moreover, policy makers and social marketers have given very little attention to WTS cessation and awareness programs. Extant research indicates that social acceptance; personal and socio-cultural values strongly influence WTS. Nevertheless, the exact relationships between these factors are not fully examined, particularly for young consumers in the Eastern Mediterranean Region (EMR), and countries where WTS is widely prevalent, such as Egypt. Examining these factors will contribute to expanding the limited body of academic knowledge regarding WTS attitudes and behaviour, enabling the creation of more effective social marketing campaigns and interventions that may help curb WTS.

This thesis draws from the marketing literature in an attempt to better understand how personal values, consumer socialisation agents (peers and parents), along with individual religiosity affect consumer attitudes and intentions towards WTS. The moderating effects of gender and the fear of negative evaluation (FNE) are also investigated. In order to carry on this research, eight key hypotheses were tested using Structural Equation Modelling (SEM), based on data collected through a questionnaire survey of 402 Egyptian youths and young adults aged 18-30.

Findings show that: (1) conservation values, peer influence, and individual religiosity are influential factors in the formation of individual attitudes towards WTS; (2) but, parental influence has no role in shaping Egyptian youths' attitudes towards WTS; (3) FNE moderates the relationship between attitudes towards WTS and the intentions to smoke; and (4) the effects of conservation values, peer influence, and individual religiosity on individual attitudes towards WTS do not differ significantly based on gender. Thus, this thesis develops and verifies a framework that contributes to theory by extending traditional theories of consumer behaviour (Theory of Planned Behaviour and Theory of Basic Values) and integrating them with social and personal constructs (Consumer Socialization, Religiosity and FNE) to predict WTS among young adults. The current study also contributes towards a better understanding of WTS specifically in Egypt, and highlights implications for wider social marketing theory and practice.

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Introduction and Background

Chapter One

Introduction and Background

1.1 Introduction

Water-pipe tobacco smoking (WTS) is a growing health concern, as consumption is increasing across both Eastern and Western countries (Jawad *et al.*, 2018; Jawad *et al.*, 2016; Ramji *et al.*, 2019). This widespread smoking of tobacco is commonly initiated at adolescence and is increasingly practiced by the youth and young adults, ages 18-30, with little knowledge of its various negative implications. This increase of WTS among younger segments is the result of various personal and social drivers, which have not been studied in depth, but is jeopardising the current and future health and wellbeing of many societies. As this epidemic continues to grow, public policymakers and health officials are taking steps towards curbing WTS (Maziak, Ward *et al.*, 2004). However, legislative procedures take time and effort to implement. Hence, social marketing efforts (where marketing and other social sciences methods are used to promote positive social behaviour) can help support and spread awareness, as well as clarify the negative consequences of WTS. Social marketing can act as a tool for voluntary behavioural change among water-pipe tobacco smokers.

The objective of this thesis is to better understand the factors that influence WTS among Egyptian youth and young adults. An in-depth investigation of these factors will provide insights and knowledge aimed at understanding WTS behaviour. With this comprehension, social marketers and health policymakers can improve their interventions and awareness programmes aimed at reducing WTS behaviour. Therefore, this thesis examines *how do an individual's peers, family, personal values, and level of religiosity shape their attitudes and intentions towards WTS; and how does gender and the fear of negative evaluation affect these relationships?*

This chapter provides an introduction to this PhD thesis. It starts with an overview of the research background regarding: the context of WTS, WTS health consequences, and smokers' perceptions towards WTS practice. This chapter further explains the rationale behind the theoretical concepts of social marketing and consumer behaviour. A brief overview of the research methodology for this study is given, and the overall researchable question and research

objectives identified. In addition, the research's theoretical significance is clarified. Finally, this chapter provides an outline of the all the chapters that make up this PhD thesis. Figure 1-1 illustrates the structure of this chapter.

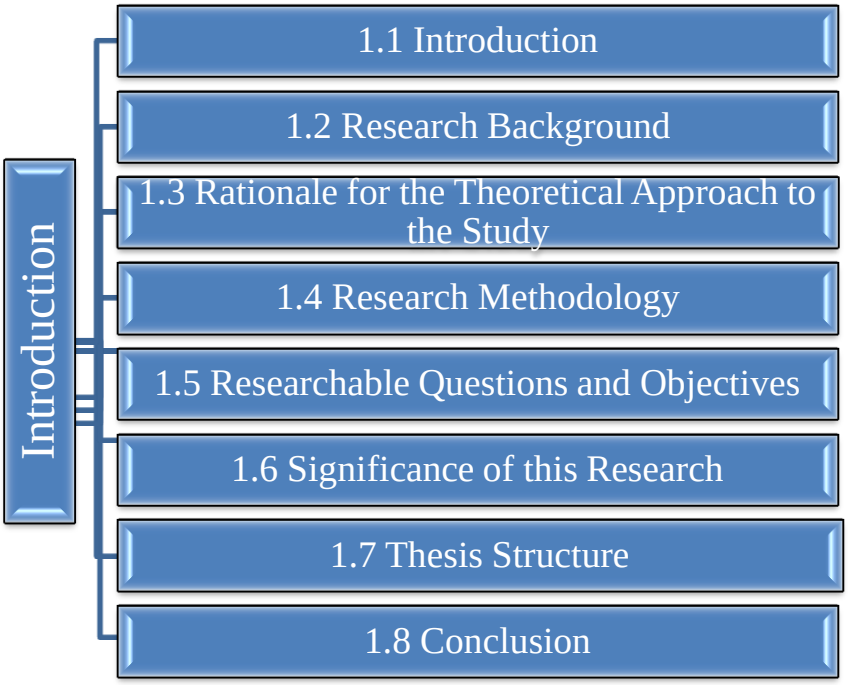

Figure 1-1: Introduction Chapter Outline

1.2 Research Background

Among the most discussed and debated topics in the world of societal health and wellbeing is tobacco smoking and its various negative consequences (World Bank, 2017; WHO, 2018b). The World Bank (2017) accentuates the incomparable health and economic burden that tobacco use causes worldwide. The report shows that over 80% of global deaths from tobacco related diseases occur in low and middle-income countries. This rate will increase due to current tobacco use patterns.

Although there are some regulatory actions, such as the WHO Framework Convention on Tobacco Control, and various smoking cessation campaigns and interventions that have taken place worldwide (e.g. *The Truth Initiative* in the USA), smoking remains one of the leading cause of preventable morbidity and mortality (Tucktuck, Ghandour, and Abu-Rmeileh, 2018; WHO, 2018b). In fact, as stated by the World Health Organization (WHO, 2017), tobacco

smoking causes one out of every ten deaths around the world creating global challenges for health officials. Hence, continuously monitoring and understanding tobacco smoking behaviour and all the problems it creates is imperative in order to develop cessation tactics and programmes.

The use of tobacco has changed over the past two decades to include other forms and variations of tobacco apparatuses and products. These include cigarettes, cigarillos, cigars, pipes, water-pipes as well as 'smokeless' tobacco that involves tobacco being chewed, placed in the mouth between the cheeks and gums or inhaled through the nose (Critchley and Unal, 2003). In 2005, the WHO declared WTS as a new public health problem (Berg *et al.*, 2015, Gilreath *et al.*, 2016).

The water-pipe (also known as *shisha, hookah,* and *narghile*) is a traditional smoking tool where charcoal-heated air passes through a punctured aluminium foil and across the tobacco mixture to become smoke that bubbles through water before being inhaled (WHO, 2015). Water-pipes are commonly used to smoke flavoured tobacco, known as Mo'assel. Mo'assel is commonly unregulated (Vansickel, Shihadeh, and Eissenberg., 2012). In addition, many water-pipe tobacco industries employ misleading marketing strategies for Mo'assel, such as reporting less tar and other harmful ingredients on the tobacco packet (Nakkash and Khalil, 2010; Jawad, Kadi, Mugharbil and Nakkash, 2015).

Akl and colleagues (2013) argued that many consumers consider WTS less harmful, less addictive, and more socially acceptable than cigarette smoking. This wrong perception is a major cause for the prevalence of WTS worldwide. Conversely, research suggested that WTS is considered just as harmful- if not more harmful- than cigarette smoking (Chan and Murin, 2011). Various health studies indicated that there is 50 times more tar produced by one water-pipe session compared to one cigarette, creating dependence among regular users (Jawad, Kadi, Mugharbil and Nakkash, 2015).

Reports indicated that WTS is associated with harmful health outcomes, which are similar to cigarette smoking (Akl *et al.,* 2010). The harmful health outcomes include lung cancer, respiratory disease, low birth weight and other significant health concerns (Akl *et al.,* 2010; Sibai *et al.,* 2014). Moreover, WTS is commonly practiced in social groups, exposing individuals to great amounts of smoke and increases the risk of second hand smoking. Another health risk is

when individuals often share the same shisha, using the same mouthpiece, hence being at risk of germ/virus transfers (Maziak *et al.*, 2004).

The lack of legislative procedures, the widespread availability of the product, and the scarcity of health awareness campaigns further contribute to the misleading perceptions among smokers. These reasons create the "reduced harm" perception (Roskin and Aveyard, 2009; Weglicki, Templin, Rice, Jamil and Hammad., 2008). Recent tobacco studies stress the need for further research into WTS, and what makes this epidemic so prevalent (Jawad *et al.,* 2018).

The widespread use of different tobacco smoking methods, other than cigarettes, threatens the global efforts formed for tobacco smoking cessation. Worldwide, many countries implement tobacco regulations, which do not accurately apply to WTS. Thus, the re-emerging of various smoking methods is considered a risk. Although WTS has been practiced in eastern countries for hundreds of years (WHO, 2005), it is currently popular in other western nations (Jawad *et al.*, 2018; Maziak *et al.*, 2015). For example, the National Youth Tobacco Survey in the USA states that throughout 2011-2015, the prevalence of WTS among high school students increased from 4.1% to 7.2% (Singh *et al.*, 2016).

In Europe, research on the adult population from 20 countries found that after cigarettes, water-pipe was their second preference in tobacco type; including countries like Denmark, Cyprus and Latvia (Agaku, King and Dube, 2014). These figures from the USA and across Europe highlight the increasing popularity of WTS among Western societies and bring into focus the health threats it poses.

WTS happens to be specifically predominant in the Eastern Mediterranean Region (EMR) that includes countries like Egypt, Lebanon, Syria, Israel, Palestine, Turkey, Libya, Jordan, Cyprus and Greece (Akl *et al.*, 2011; Jawad *et al.*, 2018). This prevalence of WTS behaviour in the EMR raises many concerns. Unlike any other region, WTS is seen as a custom that is embedded in the EMR culture. It is viewed as a social and leisure activity (Lopez, Eissenberg, Jaafar and Afifi, 2017; Maziak *et al.*, 2004; Weglicki *et al.*, 2008).

In the past, older male adults within this region practised WTS. Nowadays, it is favourably practiced among women, youth and young adults. All these views discussed only highlight the countless obstacles for tobacco smoking cessation worldwide. WHO (2018) declared that

tobacco smoking kills more than seven million people a year, making it one of the leading global health threats that has ever existed. In EMR countries, like Egypt, statistics show that tobacco-related health problems account for approximately 3.4 billion Egyptian pounds in spending per year (Fouda *et al.*, 2018).

As WTS continues to increase worldwide, more consideration and research is needed regarding the factors that influence individuals to engage in WTS. It is important to understand what the possible factors that can hinder this epidemic are. Additional research focussing on consumer behaviour and WTS can further aid in the design and implementation of effective social marketing and health awareness campaigns and interventions. Given that legislative actions take time, money, and effort to implement, social marketing campaigns are awareness tools that are considered educational, faster, and less costly to apply.

Research can aid in the creation and execution of effective social marketing activities (such as campaigns, interventions, and promotions), allowing consumers to rationally understand the risks related to unfavourable social behaviour (Rucker and Petty, 2006). With the gained knowledge, they would be triggered to take steps towards overcoming such undesirable social behaviour (WTS cessation).

This study empirically examines how socialisation agents (peers and family), personal values, and level of religiosity affect consumer attitudes and intentions towards WTS; and how does gender and the fear of negative evaluation affect these relationships. The results contribute to WTS, social marketing, and consumer behaviour literature by providing a framework that aids in understanding the various factors that influence WTS among the youth and young adults. Findings of this research can also help social marketers and public policymakers in controlling WTS practices. By gaining more insights and awareness of the factors that contribute to or hinder WTS among youth and young adults, social marketers can design and execute tailored campaigns and interventions *(further details of the research contributions are described in Chapter 7).* The next section highlights the rationale behind the theoretical approach to this research.

1.3 Rationale for the Theoretical Approach to the Study

This section provides some initial detail to the core theoretical areas that underpin this research.

1.3.1 Water-pipe Tobacco Smoking and Social Marketing as a Mechanism for Behavioural Change

As WTS continues to increase worldwide, various countries and tobacco control entities have been setting laws and protocols to regulate water-pipe tobacco products and use striving to comply with the WHO Framework Convention on Tobacco Control (WHO FCTC) (Jawad *et al.*, 2014). Nevertheless, current tobacco control policy frameworks such as the WHO FCTC are mainly developed as cigarette smoking policies (Fong, Cummings and Shopland, 2006) with loopholes that are being abused by various entities within the water-pipe tobacco industry. As such, up to this date, effective policies that address WTS are lacking and those currently present are loosely implemented (Jawad, Kadi *et al.*, 2015; Jawad *et al.*, 2018). As these policies and regulations are being further developed for effective implementation, other mechanisms of behavioural change are needed to help curb this epidemic.

Scholars conducting water-pipe tobacco research have urged the need for social marketing efforts and interventions that can operate upstream (policy level), midstream (such as educational institutes, workplaces, and service delivery entities) and downstream (individual level) to influence WTS cessation and create the awareness needed to alter misperceptions about WTS (Jawad *et al.*, 2018).

Although various WTS cessation campaigns and health interventions have run in countries like UK (London Borough of Barnet, 2017), Pakistan (Dogar *et al.*, 2014), Egypt (Mohlman *et al.*, 2013), and USA (Lipcus, Eissenberg, Schwartz-Bloom, Prokhorov and Levy, 2011) their effectiveness is not firmly established. According to Luca and Suggs (2013), proper use of theory and research is needed in order to develop persuasive and significant interventions and programmes *(Chapter 2 illustrates the need for further research and links it to research objective one).*

To develop successful interventions, WTS and consumer behaviour associated with WTS should be well researched. Nevertheless, existing contributions on this topic still remains scarce. In fact,

the factors that influence consumers' decisions to start/to stop smoking water-pipes remains in its infancy. Research is undeveloped. This lack of focus on understanding WTS and its triggers hinder the development of WTS cessation frameworks. It challenges public policymakers and social marketers into designing successful social marketing programmes and interventions that can aid in reducing WTS (Maziak *et al*., 2015; Jawad *et al.*, 2016; Jawad *et al*., 2018). As such, the prominence of this research lies in its scope where consumer behaviour that is associated with WTS is being further investigated.

1.3.2 Understanding Consumer Behaviour associated with Water-pipe Tobacco Smoking

The crucial need for social marketing interventions stems from the fact that WTS is rapidly rising among youth and young adults in the EMR, especially in countries like Egypt, where WTS's presence is endemic (Abu-Rmeileh *et al.*, 2018; Jawad *et al.*, 2018). Youth and young adults are considered the future of any society and change agents in any country. Thus, more consideration should be given towards their health as well as smoking behaviour. Scholars have indicated that the information and strategies used for combating cigarette smoking is not expected to work with water-pipe smokers; as WTS behaviour and smoking setting is quite different from cigarette smokers (Jawad et al., 2016; Maziak, 2014).

Consequently, the social setting, the place and duration of the smoking session, and the sensory characteristics within water-pipes are some of the elements that make WTS behaviour different; it makes water-pipe smokers' responses towards interventions quite different as well. Therefore, scholars in the field are still demanding more research in understanding consumer behaviour associated with WTS in order to reduce WTS (Jawad *et al.*, 2018).

In order to fully investigate WTS among youth and young adults, it is important to first understand what shapes their attitudes and behaviour, and what factors influence their decision-making process. The popularity of WTS among the youth and young adults of many societies has been related to feelings of excitement, novelty, tradition and social engagement, among others (Akl *et al*., 2015). This indicates that individual values guide WTS behaviour among this segment. However, water-pipe smokers' value systems have never been properly examined.

In the EMR, it is more culturally acceptable for youth and young adults to smoke water-pipes than cigarettes (Abu-Rmeileh *et al.*, 2018). Such acceptance of youths' WTS behaviour,

especially from their parents, is argued to be strong a predictor of youth WTS (Weglicki *et al.*, 2008). Some authors argued that sharing a water-pipe with members of the family is often how WTS is initiated among youth (Kheirallah, Alzyoud and Ward, 2015). The strong influence of peers and close friends was also strongly highlighted within WTS literature (Maziak *et al.*, 2015).

Research indicated that WTS can create a need for conformity among friends and family; or can generate the fear of disapproval by friends and family members for engaging in WTS (Maziak *et al.*, 2015). Examining such tendencies to avoid situations that might entail negative reaction (fear of negative evaluation) from family and friends might modify individual WTS behaviour (Watson and Friend, 1969). Therefore, it can further contribute to WTS literature.

Individuals' religiosity (strong religious feeling or belief) also affects WTS behaviour. Jawad Nakkash, Mahfoud, Bteddini, Haddad, and Afifi (2015) argued that the influence and role of religiosity on WTS is unclear, showing mixed research outcomes. Studies found that religion played a protective role regarding engagement in WTS (Jawad, Nakkash et al., 2015). However, the results of other studies have showed that Egyptians are more likely to believe cigarette smoking was forbidden by religious rulings more than WTS (Singh *et al.*, 2012). Hence, examining religiosity's effect in shaping individual responses towards WTS can tap into this research gap. It can clarify the importance of religiosity in this context of WTS among youth and young adults.

According to studies in the EMR, gender roles affect smoking behaviour. The role of gender difference in WTS behaviour is controversial, yet discussion in WTS research is limited. Maziak and colleagues (2015) reported that in the EMR, women and girls are more likely to use a water-pipe than other forms of tobacco, as it is more acceptable or appealing. In conclusion, these various research gaps discussed are highlighted and are further discussed in Chapter 3, with links to the second research objective.

This study applies and integrates prominent theories of consumer and social behaviour to develop and test a conceptual model that will help researchers better understand the effects of consumer socialisation, personal values, and religiosity on WTS behaviour among Egyptian youth and young adults.

In addition, the research aims to provide a framework for understanding how individual's attitudes, subjective norms, and perceived behavioural control can influence intentions to engage in WTS. This study also plans to examine the role of gender and fear of negative evaluation in shaping individuals' attitudes towards WTS. These foundations of investigation shall add to the body of academic literature.

1.4 Research Methodology

In order to tackle the researchable question outlined in Sections 1.1 and 1.2, this research uses theories in literature to construct a conceptual framework to be tested. The aim of the study is to understand the factors that influence WTS among youth and young adults in Egypt. This study embraces a positivistic worldview to conduct the current research. Hypotheses are developed in relation to the conceptual framework. Through a quantitative research approach, the data needed to test the hypotheses is gathered using self -administered questionnaires.

The eligible sample of respondents is youth and young adults in Metropolitan cities in Egypt (Cairo and Alexandria) who were considered water-pipe smokers. This study employs purposive sampling, with the use of quotas that allows the sample to be representative of the population as much as possible. The data is to be gathered just one time, over a period of three months (June, July, and August 2017).

Details about the methodological choices of this thesis are further explained in Chapter 4, relating to the third objective of this thesis. Table 1-1 provides a summary of the methodology of this research.

Table 1- 1: Research Methodology Summary

Items	Design	Reason
Philosophy	Positivism	Objective truth is represented in the theories used to develop the research hypotheses. A model is to be developed and investigated by means of a planned research design and unbiased measures by using deductive reasoning.
Purpose of the	Descriptive	This research described the characteristics of the variables under each antecedent component of

Items	Design	Reason
Research		individuals' attitudes towards water-pipe tobacco smoking. It also explained and portrayed the impact of fear of negative evaluation on the attitude formation and intention development regarding WTS.
Type of Investigation	Reliability, Frequencies, and Descriptive Analysis Structural Equation Modelling	This research helped identify the main relationships between the various variables within the proposed model, and explain the fitness of the model.
Researcher Interference Extent	Minimum	The researcher did not influence the respondents when answering the questions in the administered questionnaire.
Sample Size	500 respondents	Metropolitan cities in Egypt (Cairo and Alexandria).
Time Horizon	Single Cross Sectional	Data is gathered one time, over a period of three months (June, July and August 2017).

1.5 Researchable Questions and Objectives

In order to overcome gaps in the literature highlighted previously, this thesis attempts to answer the researchable question: ***"how do an individual's peers, family, personal values, and level of religiosity shape their attitudes and intentions towards WTS and how does gender and the FNE affect these relationships?"*** In order to answer this researchable question, the main objectives in this research are presented below. Next to each objective is the chapter in which it is discussed and addressed. The objectives of this research are to:

1. Provide a critical review and identify gaps in the literature related to WTS, and social marketing as a tool for combating smoking behaviour (Chapter 2 and Chapter 3).
2. Integrate behavioural theories and individual-level constructs in order to develop a conceptual framework that examines the factors that influence WTS (Chapter 3).
3. Develop an appropriate research methodology to collect and analyse data to address the research question (Chapter 4).
4. Empirically examine how conservation, openness to change, socialisation agents (peers and family), and individual religiosity affect consumer's attitudes towards WTS; and the

role of FNE and gender in moderating the relationship between consumers' attitudes towards WTS and their behavioural intentions to smoke (Chapter 5).

5. Critically discuss findings of current research, and compare them to prior findings within the literature (Chapter 6).
6. Highlight the theoretical contributions and practical implications of the study, and identify limitations and areas for future research (Chapter 7).

1.6 Significance of this Research

From fulfilling these objectives this research aims to contribute to existing marketing knowledge in the following ways:

- Focusing on elements, both socio-cultural and personal; in addition to factors under study that have been subject to limited research or never explored in the WTS context (e.g. personal values, gender, FNE and religiosity) can strongly *contribute to the academic body of knowledge* and *fill research gaps* in the WTS research, social marketing literature, and extend the theories in use.
- The *conceptual model* proposed by this study further clarifies the key factors that influence WTS among the youth and young adults, which in turn would aid social marketers and health policymakers in the design and execution of social campaigns and interventions that would minimise and prevent WTS.
- There is limited research committed to studying WTS behaviour in Egypt, although its *prevalence in the region* is well established. The findings of this study can therefore provide a contribution to academic knowledge in understanding the factors that influence WTS behaviour among Egyptian youth and young adults, leading to its cessation in the EMR.
- The current study also contributes to WTS literature by focusing on *youth and young* adults (18-30) as the population under study as prior studies found that their smoking rates are at their highest when compared with other age groups.

1.7 Thesis Structure

This thesis is divided into seven chapters. The remainder of the thesis is organised as follows.

Chapter 1: Introduction and Background

This chapter has provided an overview of the current topic and the background of the subject matter. It has explored the nature of the problem, including origins of the study, and described the research methodology, researchable question and objectives, academic and practical significance of the research, and the research plan.

Chapter 2: Water-pipe Tobacco Smoking

A critical review of previous studies focusing on consumer behaviour and smoking is provided in this chapter. It revises prior literature concerning the prolonged history of smoking around the world, and specifically in Egypt. This chapter introduces and explores the concept of WTS, its prevalence, and consumers' motives for smoking water-pipes. This chapter's review of prior studies and literature justifies the need for the current research topic.

Chapter 3: Theoretical Background and Hypotheses Development

This chapter provides an overview of the rise of social marketing, including its implementation and its role in smoking cessation. It also examines various social and health behaviour theories that could potentially be used to understand WTS behaviour. Additionally, the chapter revises prior literature concerning theories and notions in social learning, the effects of parental and peer influence, and other theories regarding personal values and attitudes shaping processes. Furthermore, this chapter explores the potential effect of other behavioural constructs, such as religiosity, FNE, and gender differences in WTS. Importantly, this chapter addresses the research gap, as well as develops hypotheses for testing the relationships between the key research variables.

Chapter 4: Research Methodology

The design and structure of the current research is outlined in Chapter 4. It clarifies and rationalises the research philosophy, research strategy (deductive quantitative research-based),

and data collection techniques (primary data from questionnaires) to be adopted in the empirical collection of data for this study. Details on the site and sample are provided. Moreover, this chapter discusses the framework of data analysis.

Chapter 5: Data Analysis and Results

The findings from the empirical study of the data collected for the purpose of data analysis are reported. The outcomes of the analysis are illustrated. In addition, the testing of the hypotheses proposed and the results of the structural equation modelling are presented.

Chapter 6: Research Discussion

The findings of this research are examined and discussed in order to further understand their meaning and relevance. A comparison of the empirical findings against the results of prior studies in the literature review also takes places.

Chapter 7: Conclusion and Recommendations

The overall aim and specific objectives of the current research study are revisited and discussed in terms of how they were addressed. Based on the outcomes of this study, several significant theoretical contributions and managerial implications are presented. This chapter also highlights the research limitations and considers potential paths for future research.

1.8 Conclusion

This chapter has provided an introduction to this PhD thesis and given an overview of the global presence of WTS, especially in the EMR. Several areas that can be further explored to add to the body of knowledge within WTS, consumer behaviour, and social marketing were highighted. The research methodology adopted in this study was also briefly outlined. Subsequently, the aims and objectives were presented before the significance of this research was highlighted. This chapter finished with an overview of the forthcoming chapters.

Chapter Two

Water-pipe Tobacco Smoking

Chapter Two

Water-pipe Tobacco Smoking

2.1 Overview

The fight against tobacco smoking has long been challenging and full of defeats and triumphs. Smoking is a great cause of mortality and premature death around the world. According to the World Health Organization (WHO, 2019), eight million deaths around the world occur each year due to different diseases caused by tobacco smoking. The report by the WHO (2019) also indicated that most of these deaths would occur in developing countries. Accordingly, these results trigger the need for further research such as that presented in this thesis. Scholars and policymakers seek to find solutions to control and prevent smoking habits, creating conscious citizens who are mindful about their health and well-being.

In line with global statistics, the number of worldwide smokers, aged 15 years or more, reached 1,114 million in 2015; out of which 939 million are males and 175 million are females (WHO, 2018a). The WHO announced that their target is to reach a 30% reduction in the global prevalence rate by 2025, requiring an annual reduction of 0.73% per annum. Currently, the world is facing an annual reduction of around 0.6%. In addition, the WHO confirmed smoking initiation usually occur among inviduals when they are young. Numerous worldwide surveys that have been conduct among children aged 13–15 years specified that 24 million of them smoke. Meanwhile, the adult surveys show that smoking initiation starts among people aged 15–24 years old (WHO, 2017). With such statistics at hand, it is important to understand the prevalence of tobacco smoking among younger age segments as this health hazard can affect the future of many societies around the world.

In order to distinguish smokers from those who are occasional or infrequent smokers, the National Health Interview Survey (NHIS), issued by the United States of America, defined a smoker as: *"an adult who has smoked 100 cigarettes in his or her lifetime and who currently smokes cigarettes"* (NHIS, 2017). According to WHO (2015), it had been noticed that the prevalence of tobacco smoking is decreasing in many western and Asian regions. However, the

EMR and African region did not show any improvements in decreasing their rates of smoking prevalence, demanding further investigation and research.

Smoking is more prevalent in the Middle East region than other regions, due to their specific ancient culture traditions that have pervaded their ways of life, their ethics, and their behaviour. Consequently, all those changes influenced the specific modes of tobacco consumption within the region. Thus, further research is needed to study tobacco consumption habits in these countries and to implement prevention measures adapted to their specific characteristics (Kheirallah *et al.,* 2016; Tessier, Nejjari, Bennani-Othmani, 1999). According to the WHO reports, the EMR countries showed high prevalence of male smokers compared to females; as female smoking shows lower rates due to social and cultural barriers. The report also clarified that the prevalence of smoking among youths of different genders are nearly equivalent, showing the gender differences can be minor in some countries in the region. This indicated that social and cultural barriers in the region may be shifting (WHO, 2015). However, these barriers have not been thoroughly studied and are in need of research that this thesis is carrying out.

The report by the WHO (2015) states that Egypt, one of the EMR countries, is a developing country that shows a widespread growth of smoking among its population. Current data suggested that smoking is a public health problem in Egypt. The WHO (2015) report on the global tobacco epidemic in Egypt reported that the adult daily smoking frequency was 14%. According to statistics, 95% of Egyptian smokers are categorised as smoking daily. Moreover, as mentioned earlier in Section 1.1, tobacco-related health problems in Egypt account for nearly 3.4 billion Egyptian pounds per year in spending (Fouda *et al.,* 2018). These numbers are considered alarming, given that limited research attention is given to this growing death threat (Fouda *et al.,* 2018).

Table 2-1 shows the established prevalence of tobacco smoking in Egypt among males and females (WHO, 2015). As illustrated, from 2000-2025, tobacco smoking is shown to continue increasing over time. It is also important to note that according to these statistics, Egypt will have a higher prevalence rate of tobacco smoking than in other EMR countries, like Lebanon, where smoking is also highly customary. Hence, more attention should be assigned to investigating the reasons behind this growing tobacco smoking behaviour.

Table 2-1: The estimated prevalence of tobacco smoking in Egypt

		Prevalence of smoking any tobacco product among persons aged >=15 years		**Prevalence of current tobacco use among adolescents aged 13-15 years**	
Country	**Year**	**Male**	**Female**	**Male**	**Female**
Egypt	2025	63.1 [31.4-94.2]	0.1 [0.1-0.3]		
	2020	56.3 [34.9-58.0]	0.2 [0.1-0.3]		
	2015	49.9 [35.0-56.6]	0.3 [0.2-0.5]		
	2012	45.9 [23.7-57.2]	0.4 [0.3-0.6]		
	2010	43.9 [35.0-52.9]	0.5 [0.3-0.7]		
	2009			20.0	2.8
	2005	39.3 [32.1-48.7]	0.8 [0.5-1.1]	16.0	7.6
	2000	35.5 [23.6-48.4]	1.2[0.6-1.8]		

Source: WHO (2015)

Approximately 21% of the Egyptian population is within the age range of 15 to 24 years (CAPMAS, 2016); and the increasing use of tobacco among Egyptians is considered a threat among this demographic. The principal law for smoking prevention in Egypt was released in 1981 (Law No. 52), with other tobacco legislations that were later added to enhance it, including Law No. 85 (2002), Law No. 154 (2007), and Law No. 443 (2008) (Fouda *et al.*, 2018). According to the WHO (2013), Egypt is one of the countries that have approved the World Health Organization Framework Convention on Tobacco Control (WHO FCTC). However, the implementation of the FCTC is relatively low, where laws such as indoor smoking bans, age restriction and compliance with tobacco-related product laws are poorly implemented. Thus, it is not surprising to find that although the yearly population growth in Egypt is 2%, the number of smokers in Egypt is projected to rise by 8% each year (Fouda *et al.*, 2018). With weak legislative procedures and lack of awareness programmes, several methods of smoking (such as WTS) are prevailing without strict control strategies. As such, more research is needed to focus on this health and social problem, and the ways in which it can be controlled. According to El Awa, Fouad, El Naga, Emam and Labib (2013), approximately 3.3% of the Egyptian population smoke water-pipes. As such, further research is needed to focus on this health and social problem, and the ways in which it can be controlled.

Recent tobacco studies have shifted the focus of their research on WTS, as it is a prevailing habit despite the fact that there are other smoking methods that are still considered common (like cigarettes smoking). Yet, WTS is now considered a social habit that is spreading worldwide and specially in the Arab countries. This is due to the view that WTS is perceived to be more socially and culturally acceptable than other forms of tobacco smoking. Several studies have shed light on the prevalence of WTS in counties of the EMR and other Arab countries, such as Egypt, Lebanon, Jordan, UAE and Syria (Abu-Rmeileh *et al.*, 2018; Dar-Odeh and Abu-Hammad, 2011). It was concluded that health hazards caused by WTS should be publicised among smokers through social marketing activities and different interventions. These activities would allow individuals to be aware of the harmful consequences related to WTS. Thus, these activities would help in controlling such a habit. Therefore, more thorough investigation is needed to understand the social behaviour of smokers and how they could be affected by interventions.

This chapter discusses what is meant by WTS as a smoking method and outlines its components. It also discusses the reasons behind the prevalence, and the factors that contribute to engagement in WTS.

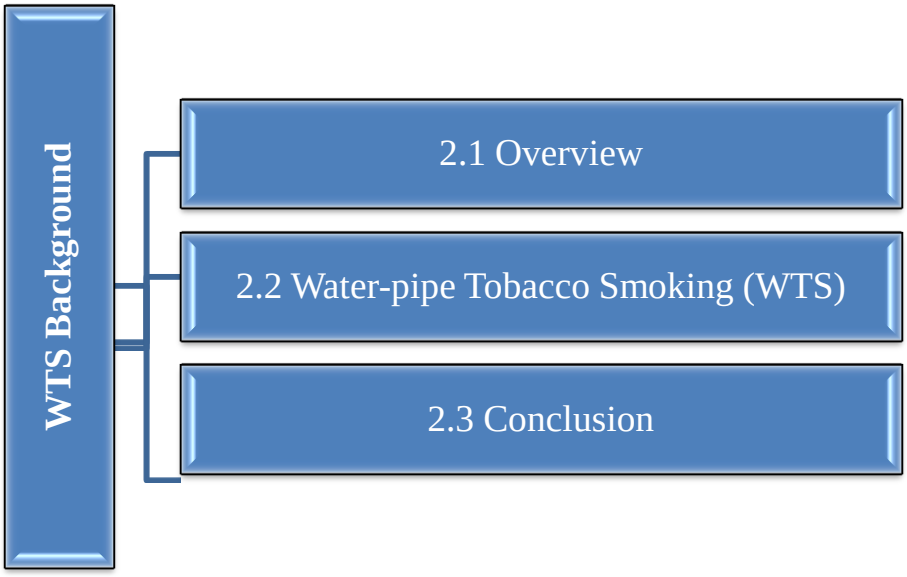

Figure 2-1: Chapter Two Outline

2.2 Water-pipe Tobacco Smoking (WTS)

Water-pipe Tobacco Smoking (WTS) has been used for smoking tobacco for centuries in the EMR. Nowadays, youths' and young adults WTS is associated with the pop-culture. WTS name varies according to the region, where "shisha", "boory", or "goza" are known in Egypt and Saudi Arabia; "narghile", "nargile", or "arghile" are known in Israel, Jordan, Lebanon, and Syria; "hookah" is known in Africa and the Indian subcontinent; and "hubble bubble" in many other regions (Maziak *et al*., 2004).

WTS describes the inhalation of tobacco smoke after it passes through water. Water-pipes are commonly used with a flavoured tobacco mixture. As with any tobacco consumption, water-pipe smoking exposes smokers to harmful levels of tobacco-specific nitrosamines, polycyclic aromatic hydrocarbons, and other common toxicants found in tobacco (Jawad *et al.,* 2016). As such, medical studies suggest that users are at bigger risk of cardiovascular diseases, lung cancer, and other respiratory conditions, unlike non-smokers (Jawad *et al.,* 2016).

When water-pipe smoking was first initiated, it was for older men with a low socioeconomic level. Currently, water-pipe smoking is spreading to include women and young people with different social levels. Unfortunately, in the EMR boys and girls are using water-pipes, which they view as fashionable. Water-pipes are now common within Arab societies. Many restaurants and cafes in the EMR include water-pipes in their menus and serve them to customers of all ages (Maziak *et al.,* 2004; Akl *et al.,* 2015).

The focus of this thesis is to better understand WTS behaviour in order to develop social marketing strategies that can help control this global epidemic. Thus, it is important to first introduce and explain WTS types and its components and the social context in which it is consumed. The following subsections explain in detail the types of WTS and its components.

2.2.1 Water-pipe Tobacco Smoking Types and Components

As known in Egypt, WTS takes the form of three main variations, which are illustrated in Figure 2-2 by the WHO (2006b) report. The first kind is called a Gouza, which is the oldest type of water-pipe. It has a small water container made of metal (and in modern days, is made of glass) which ranges between 200 and 500 ml. The second type is called a Bouri, where a brass-made

water vessel that ranges between 200 and 500 ml is used. The third, and more common type, is called a Shisha. It includes a water flask traditionally made of glass, but is also made of various materials that includes ceramics, metal, and sometimes includes silver and brass (Chaouachi, 2010).

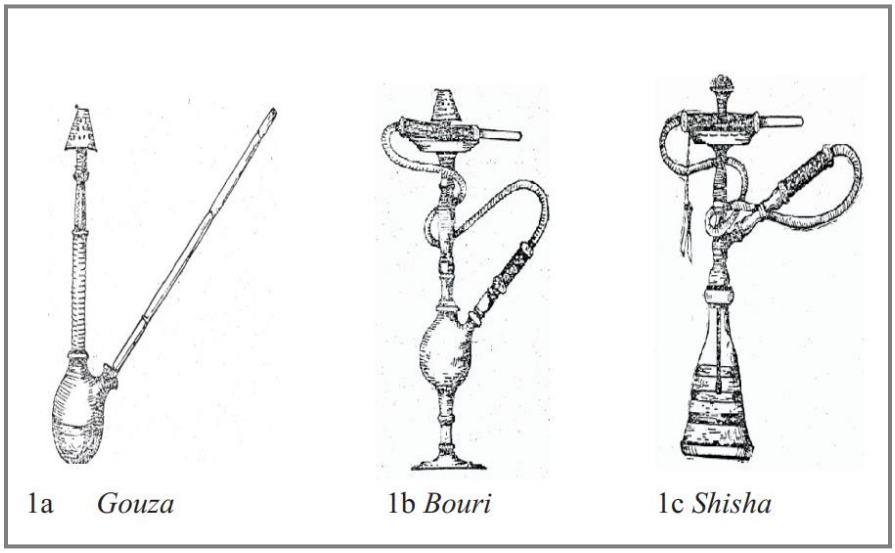

Figure 2-2: Waterpipe Tobacco Smoking Types
Source: WHO (2006)

Figure 2-3 shows the pathway of shisha, with different parts as mentioned. The parts of WTS are presented according to their pathway to the mouth. The first part is represented in a container that burns the tobacco with charcoal on top, known as a korsi (translates to *chair* in English). The amount of tobacco on the korsi is called a hagar (or tobacco bowl – translates to *rock* in English). In a more modern version, at times the korsi has a storage space for some ice cubes to be added, in order to make the inhaled smoke become colder for sensory pleasure. Acover is sometimes used to isolate the charcoal from direct breezes that can overheat the coal, thus burning up the tobacco. The second part is a stem pipe, linking the korsi to the water vessel. The third part is a water container, with varying sizes. Sometimes flavour (in the form of juice) is added to the water in order to improve the taste of the tobacco (WHO, 2006). The fourth part is the pipe, traditionally made of rubber or wood that is connected to the top of the water vessel, pulling in the smoke that is filtered through the water. Newer versions of the pipe or hose are made of plastic, and some special kinds have a container that includes replaceable ice packs. The fifth

part is the mouthpiece fixed to the hose. The hose is supposed to be changed after each use. The sixth and the last part is the pair of tongs that are used to handle the charcoal (WHO, 2006).

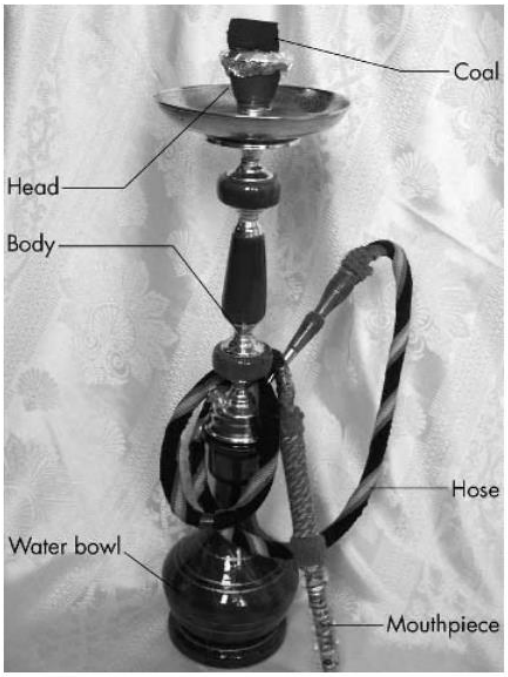

Figure 2-3: Water-pipe Components

The most popular type of tobacco used in water-pipes is called ma'assel. It is a mixture of crude tobacco fermented with molasses (black honey) (Anwar, 1994). This mixture is infused with various flavours that are sometimes fruity (apple, lemon, mint etc.), other non-fruity flavours (Cola, Vanilla, Bubble gum etc.) and even prominent drinks flavours (Vodka, Redbull, Wine, Rum etc.). Tombak is just another form of ma'assel. Jurak is a different form, also known in the Syrian Arab Republic as Ajami. Water-pipe smokers more commonly smoke ma'aasel. Flavoured tobacco is one of the main reasons why younger segments have engaged in WTS, as will be further discussed in Section 2.2.2. This detailed description of water-pipes and how they work highlights how the misconceptions about WTS being healthier than cigarette smoking have been acquired (e.g. smoke filtered through water, one session as compared to all-day cigarette smoking). However, water-pipes smoking varies from cigarette smoking.

Water-pipes are different from cigarettes as the water-pipe has less frequent exposure than cigarettes. Meanwhile, a water-pipe has higher levels of more intense exposure per session/use.

The consumption of tobacco nicotine is equivalent to 2–12 cigarettes per portion of tobacco used in a tobacco bowl (WHO, 2006). WHO (2005) argued that a water-pipe smoker breathes in the quantity of smoke produced by 100 or more cigarettes in a common shisha smoking session that would last for one hour. Although these fatal facts about WTS are documented in various research, their communication to societies worldwide is limited. This lack of proper awareness about the damaging effects of WTS creates misconceptions and increases the use of WTS as an alternative to daily cigarette smoking. This prevalence creates a challenge to curbing WTS, and such must be addressed with extensive research and thorough understanding of the epidemic at hand.

When describing the water-pipe tobacco industry, very little information is presented throughout academic literature. A recent study by Singh and colleagues (2018) explained the features of the water-pipe industry. They conducted semi-structured interviews with 20 representatives of water-pipe companies taking part in a trade exhibition in Germany. Through the themes that emerged from the research, findings suggested that the industry seemed to be in early growth phase of its life cycle. The business was considered fragmented and were small family-run businesses. The industry was also defined as transitional and decentralised. However, it is slowly growing into a global and established industry, with links to the cigarette industry. Moreover, proof of breaches of tobacco control laws were also found through the interviews. The research argued that the industry was difficult to define, and rather multidimensional. The water-pipe industry incorporates entities from tobacco and non-tobacco industries (such as glassware), rather than one single unit. This lack of definition, knowledge, and familiarity with the water-pipe tobacco industry is an additional challenge to most policies and interventions that strive for WTS cessation (Singh *et al.*, 2018). Current research in WTS has urged research in tobacco studies to further investigate this re-emerging smoking habit, its hazardous consequences, and understand the reasons behind its widespread presence and its focus on younger age segments of society. The next subsection discusses the prevalence of WTS and its various negative health effects.

2.2.2 Water-pipe Tobacco Smoking Prevalence and Harmful Effects

As discussed earlier, WTS is notably prevalent in many parts of the world. For example, data from the National Youth Tobacco Survey in the US (from 2011-2014) that was focused on ages

11–18, states that past-30-day water-pipe prevalence has increased from 4.1% to 9.4%. In reality, while cigarette smoking rates have decreased by nearly 33% among US young adults from 2000 to 2011, WTS has increased by almost 123% (Arrazola *et al.*, 2015; Johnston, Miech, O'Malley, Bachman and Schulenberg, 2014). Among university students in the UK, research showed that between 38–52% had ever tried water-pipes and between 8–11% were past-30-day users (Jawad *et al.*, 2016). The latest reports from the Global Youth Tobacco Survey (GATS) identified high prevalence of WTS in countries, like Lebanon, the West Bank and others (Jawad, Khader and Millett, 2016). Such influential presence of water-pipe smoking around many parts of the world is alarming, especially when it is dominated by the younger segments of society. As such, a global focus on ways to regulate it is essential.

Among the highest countries in WTS consumption in the EMR is Egypt. Egypt had an exceptionally high ratio of current smokers of cigarettes, water-pipe, and dual smoking among university students (Abu-Rmeileh *et al.*, 2018). A report by GATS (2009) stated that 3.3% of Egyptian adults aged 15 years and above smoked water-pipes. This percentage means that approximately 1.6 million Egyptians are considered shisha smokers. Men were shown to be smoking more than women, as the percentage of male smoking is 6.2% (1.6 million), while women's percentage is 0.3% (73,000). For men, present WTS rose from 2.3% for ages 15–24 years to 10.5% for ages 45–64 years. Smoking rates were considered higher in Rural Upper Egypt (9.3%) than the other regions. These demographics have changed over time. Nowadays, WTS is spreading among women and young adults across different educational and income levels. Over 40% daily shisha smokers were aged 18–34 years (GATS, 2009). Initiation of daily shisha smoking before the age of 18 years was 40.7% for men. The average age of initiation of daily shisha smoking for men was 18.2 years. The GATS (2010) report alarmingly reports that smoking has doubled in Egypt over the past 15 years. As such, this widespread presence of WTS in countries like Egypt requires continuous research to better understand consumer behaviour that is associated with WTS, and raising awareness about its effects, both physically and socially.

As mentioned in Section 2.2.1, many smokers believe that WTS is healthier than cigarette smoking as it has less exposure. For example, a person can smoke up to 20 cigarettes a day, but for a shisha smoker, it is almost only a one-hour session of shisha a day. The smoke is also viewed to be filtered through water, giving the smoker a more "cleansing" perception of the

smoke that is being inhaled. In contrast to what people perceive, shisha contains all the harmful substances of tobacco, like nicotine, tar, carbon monoxide and heavy metals, such as arsenic and lead. Therefore, exposure to WTS causes short term and long-term negative health consequences. Short term effects include: expired air CO, plasma nicotine, and increased heart rate. Long-term effects include: cancer, cardiovascular disease, and addiction. It was also found that cardiovascular system complications (such as atherosclerosis and hypertension, chronic obstructive pulmonary disease, pancreatic cancer, erectile dysfunction, spermatic malformation, and bladder cancer) were usually reported problems of smoking in Egypt (Fouda *et al.*, 2018). The WHO (2015) reported that shisha smokers can develop similar types of diseases as cigarette smokers, such as heart disease and cancer. Some newly born babies with low birth weights were associated with women that smoke shisha during pregnancy. This makes shisha very harmful, perhaps even more harmful than smoking cigarettes. Nevertheless, the numbers of shisha smokers in the EMR and around the world are increasing, with very little focus on such prevalence. As such, it is vital to understand the reasons behind this growing epidemic among the youth and young adults.

The next subsection discusses several reasons why WTS is now common among youths and young adults.

2.2.3 Motives and Regulations for Water-pipe Tobacco Smoking

Research on tobacco and health studies has been investigating this re-emerging smoking behaviour in order to clearly understand the reasons behind its prevalence, especially among different segments, such as women and young adults. This prevalence could be for several reasons. According to prior research, one reason that motivates individuals to smoke water-pipes is the sensory experience that shisha smoking provides. For example, shisha is introduced with flavoured tobacco, which makes it pleasant and more tasteful. Flavours have a significant role in attracting young people towards WTS. Thus, in January 2018, the Truth initiative released a detailed fact sheet, discussing the use of flavour in tobacco products in drawing in younger segments. In a US study by Ambrose and colleagues (2015), it was found that around 80% of individuals aged 12 to 17 years old reported their first use of tobacco smoking was the flavoured water-pipe. Other research reported that more than four out of five young adults (18 to 24 years old) stated that their first product ever smoked was flavoured (Villanti *et al.*, 2017). Another

study reports that 83.5 percent of those who reported that they use a flavoured tobacco product are young adult non-cigarette tobacco smokers (Bonhomme *et al.,* 2016). Other sensory elements, such as the sound of the shisha bubbling when inhaling (Lipkus *et al.,* 2011), the smell of the smoke (Ahmed, Jacob, Allen and Benowitz, 2011), and the amount of smoke produced when exhaling (Noonan, 2013) were all factors contributing to the popularity of WTS (Afifi *et al.,* 2013; Akl *et al.,* 2011; Noonan, 2013; Wray *et al.,* 2012).

Many studies reported that an important reason for the prevalence of WTS is the cultural and social acceptability of the WTS. In the Egyptian context, many cafes and restaurants provide WTS as part of the culture. To many smokers, WTS is associated with their cultural heritage (Jamil *et al.,* 2009). Sharing the same water-pipe and mouthpiece is also a common, widespread practice, especially among young people. This makes WTS a central element that facilitates social interactions, especially in café settings (WHO, 2015). Water-pipes are also smoked for entertainment, leisure, and filling up free time (Ghafouri *et al.,* 2011; Griffiths, Harmon and Gilly, 2011; Martinasek, McDermott and Bryant, 2013). In some countries, WTS is viewed as a sign for liberation for both men and women; and sometimes an expression of manhood (Makhoul and Nakkash, 2009; Afifi *et al.,* 2013; Khalil *et al.,* 2013). Water-pipe smokers usually smoke in the presence of friends and family. In many nations, it is a central component of social and family gatherings. Numerous pieces of research have highlighted the effects of both family and peers on WTS behaviour, and consider these social groups a critical motivator for WTS (Amin, Amr, Zaza and Kaliyadan, 2012; Braun, Glassman, Wohlwend, Whewell and Reindl, 2012; Jawad *et al.,* 2013; Karimy, Niknami, Heidarnia, Hajizadeh and Shamsi, 2013; Sabahy, Divsalar, Bahreinifar, Marzban and Nakhaee, 2011). For example, in a study on Saudi females, it was found that peer pressure is highly affecting young females in Saudi Arabia towards WTS. Peers convince friends that WTS is a matter of fashion, or a mood enhancer (Abdulrashid, Balbaid, Ibrahim and Shah, 2018).

WTS is popular among individuals due to misperception of its harm. Many people hold the conception that shisha is not as harmful as smoking cigarettes. Most studies in WTS confirm this misperception among water-pipe smokers (Abu-Rmeileh *et al.,* 2018). The perception that shisha is not smoked all day, every day, gives water-pipe smokers the impression that it is less harmful to their health. WTS is also easily accessible. The present policies and regulations regarding

tobacco, which could control the prevailing presence of shisha are weak in many Arab societies (Boynton *et al.*, 2016). This was confirmed with data obtained by Kotecha, Jawad and Iliffe, (2016). Their research confirmed that when WTS is socially acceptance and available at many smoking premises (such as cafes and bars), it appears highly accessible for users. The absence of health information among smokers may be an influencing element to its continued use. However, it was concluded that there are few regulatory policies to face. Thus, the prevalence is caused by the volatility of the application of these polices.

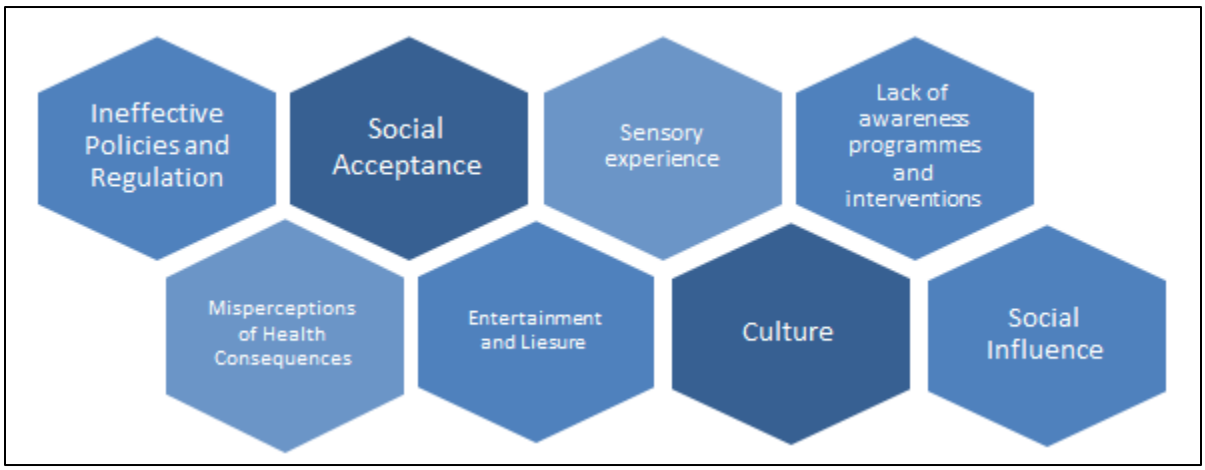

Figure 2-4: Some of the Main Motives for WTS

Despite this alarming presence and acceptability of WTS among many societies worldwide, there is not enough awareness about the harm that may be caused by shisha smoking. Therefore, it has been suggested that there is a need to create interventions and health programmes that show the dangers associated with WTS. This need for interventions was confirmed by the study by Jawad *et al.* (2018) who highlighted how interventions affect smokers' behaviour. Individuals can be influenced to stop smoking through interventions which focus on behavioural treatments. Nakkash, Torossian, El Hajj, Khalil and Afifi (2018) also conducted research in Lebanon and confirmed that interventions could be effective. They indicated that interventions could affect the attitude of smokers away from WTS. Therefore, cessation interventions and other social marketing efforts that are designed based on proper research, such as this study, may help understand the factors that influence water-pipe smokers, and aid in WTS cessation.

It is vital to understand the different regulation procedures and interventional tactics used in combating WTS. One of the common intervention regulations taken regarding tobacco products is **taxation**, which was argued to be ineffective as the demand of WTS was found to be inelastic due to the fact that water-pipes could be shared with peers, allowing division of its cost. Thus, taxation as policy for regulation was assumed to be unsuccessful (Lopez *et al.*, 2017). Maziak and colleagues (2015) argued that taxation maybe an ineffective tool in influencing behavioural change.

Some interventions were recommended in different studies. Jawad and colleagues (2016) suggest that **Public health policies** should be enhanced to prevent further uptake and promote cessation. Policymakers should respond by ensuring appropriate supervision in the enforcement and implementation of water-pipe tobacco legislation. These applications need to be placed on a par with cigarettes (Jawad *et al.*, 2016). Regulations, such as banning indoor smoking, age limits (18+) for buying and smoking shisha, packing and warning labels, and other tactics should be effectively implemented. Policymakers should stay proactive and aware with all the changes occurring in the tobacco industry and usage pattern (new tobacco products, new targeted segments of women, etc.) without relying on old perceptions regarding tobacco smoking (Kheirallah *et al.*, 2016).

A study by Islam and Johnson (2005) claimed that increasing adolescents' refusal **self-efficacy skills** should be integrated into any smoking prevention programme aimed at adolescents from any culture. Momenabadi, Hashemi and Borhaninejad (2016) found that various personal, interpersonal (such as parents, significant others, etc.), and organisational factors were effective in the prevalence of smoking shisha. Therefore, preventive interventions should be planned and implemented at social or ecological levels, using social and health promotion theories and models. Using **non-governmental organisations (NGOs) and public entities** could contribute to the prevention of tobacco consumption (such as The Truth Initiative) as will be further illustrated in Section 3.2.2. It has been claimed that **universities and other educational institutes** should incorporate health education measures, such as seminars and intervention programmes, in order to raise awareness of the harms associated with water-pipe use (Jawad *et al.*, 2013). Kheirallah and colleagues (2016) stressed involving parents, schools and local communities for promoting a healthier lifestyle. For example, it was suggested that supporting

school interventions should be used to enhance the skills needed by young people to reject WTS behaviour. This highlights the influence of consumer socialisation on individuals' smoking behaviour, as this thesis examines.

Prior studies in **social media** have suggested that tobacco use exposure on social media predict future tobacco smoking among young adults (Depue *et al.*, 2014). Accordingly, a recent study by Ben Taleb, Laestadius, Asfar, Primack and Maziak (2018) examined the impact of Instagram, which is a social networking platform where pictures and short videos are shared, on promoting hookah smoking and discussed the health challenges generated. The study found how hookah smoking is being portrayed positively, both by personal and commercial entities, with disregard to the harms involved in smoking shisha, with hashtages such as #hookahlife and #shishalover that link WTS to being part of a community, identity and lifestyle. Table 2-2 illustrates some of the key stakeholders and tactics that are involved in WTS interventions.

Table 2-2: Key stakeholders and tactics that are involved in WTS interventions

WTS Intervention Tactics/Key Stakeholders	Examples
Policies and Regulations	Taxation, age restrictions, warning labels
Governmental and non-governmental organisations (NGOs)	The truth initiative, Egypt's Ministry of Health
Educational Institutes	Schools, universities
Interpersonal Influence	Parents, siblings, significant others, teachers, friends, co-workers
Social Media	Platforms such as Instagram, Facebook, Twitter, Tumblr, YouTube

Despite the various efforts towards WTS cessation, WTS is still widely popular and increasingly prevalent. Jawad, McEwen, McNeill and Shahab (2013) argued that the WTS is becoming more popular, mainly with young people as they hold the perception that WTS is less harmful than cigarettes. Nasser, Salah, Regassa, Alhakimy and Zhang (2018) conducted a recent WTS study in Yemen. In this study, it was observed that there is a growth in tobacco smoking among college students. The research reported interesting results. For example, the findings showed that among men the prevailing smoking type was cigarette smoking; while WTS was more prevalent in women. Despite Nasser *et al.* (2018) being a recent study, research recommends continuous and

more investigations on this topic because of the need for improved cessation programmes development to raise youths' awareness and promote anti-smoking attitudes.

Abu-Rmeileh *et al.* (2018) conducted research to investigate the root causes beyond the prevalence of WTS. The research used a sample from university students from five countries of the Eastern Mediterranean Region (EMR): Egypt, Jordan, Occupied Palestinian Territories (OPT), Oman and United Arab Emirates. It was found that the prevalence of WTS is highly related to the cultural acceptance and the misperception towards the dangers of WTS. Furthermore, the latter factor of perceived health while using the water-pipe was supported by the review done by Maziak *et al.* (2004). Their research claimed that the lack of knowledge and policies regarding the use of WTS are causes of its prevalence. The research indicated that it is important to explore and understand factors related to motivation and social behaviour of smokers towards WTS to be able to face such hazards. These studies are helpful to interventions which focus on direct messages that could stop such prevailing habits. Meanwhile, legislatures are not up to date enough in creating policy measures related to WTS (Hoffman *et al.*, 2018).

It could be concluded that such proliferation of WTS calls for social marketing efforts and interventions. Jawad and colleagues (2018) have recently expressed the crucial need for WTS interventions that can help control this epidemic. Awareness is needed to help individuals become better informed about the harms of WTS, and inspire positive behavioural change among water-pipe smokers.

2.3 Conclusion

WTS is prevalent across the EMR. According to the WHO (2015), it will continue to prevail. As this tobacco smoking behaviour continues to increase worldwide, it is most widespread across the EMR. Although some behavioural change mechanisms are present, such as legislation, it is still very weak, and needs time and high cost to implement. As such, it is crucial that more attention is given to this growing epidemic, both academically and in practice.

Chapter Three

Theoretical Background and Hypotheses Development

Chapter Three

Theoretical Background and Hypotheses Development

3.1 Overview

Prior studies in tobacco research have attested that the behaviour of smokers of WTS differs from cigarette smoking, arguing that they may not respond to conventional intervention techniques in the same way as cigarette smokers. Moreover, as highlighted in the previous chapter, studies show that a more thorough understanding of water-pipe smokers' behaviour can guide policy makers and social marketers in designing and executing more effective intervention programmes that can curb this epidemic. Hence, it is crucial to achieve a better understanding of the various attitudes associated with WTS, as well as determining the factors that motivate people towards WTS. In this chapter, social marketing is discussed as a mechanism for behavioural change. As the aim of this study is to better understand WTS, and the factors associated with this behaviour, these following reviews of social marketing campaigns are presented in order to illustrate how social marketing can be a tool for WTS cessation, but not for the aim of evaluating social marketing campaigns that promote WTS cessation. Consumer behaviour is then discussed through introducing different theories that can be used to examine WTS behaviour. In addition, the effectiveness of the theory of planned behaviour for explaining individual behaviour associated with WTS is debated. The influences on WTS behaviour are also illustrated and the hypotheses used in this study are developed. Finally, a conclusion is derived out of the discussion, outlining the research hypotheses and conceptual model, which guides the study's research methodology.

This chapter is presented in five sections. The first section signifies the current overview of this study. The second section discusses social marketing and its elements, and explains how social marketing efforts can respond to shisha smoking habits. It also reviews the effectiveness of social marketing efforts that have been done for smoking cessation. The third section presents the research developments in understanding consumer behaviour. It provides insights on different theories proposed in explaining consumer social behaviour, such as theory of planned behaviour (TPB), theory of reasoned actions (TRA), social cognitive theory (SCT), health belief model, and trans-theoretical model of health behaviour change. The next section provides a

detailed discussion of the theory of planned behaviour effectiveness and how it could be effective in this research. Describing the different influences on WTS behaviour, like personal values, socialisation agents, religiosity, fear of negative evaluation, and gender takes place in the fifth section with the research hypotheses being developed throughout. Finally, the sixth section gives a conclusion of the previous studies, highlighting the research gap in literature, and summarises the research hypotheses and conceptual framework to be tested. It also discusses how this study attempts to tackle the issue. Figure 3-1 illustrates the current chapter mapping.

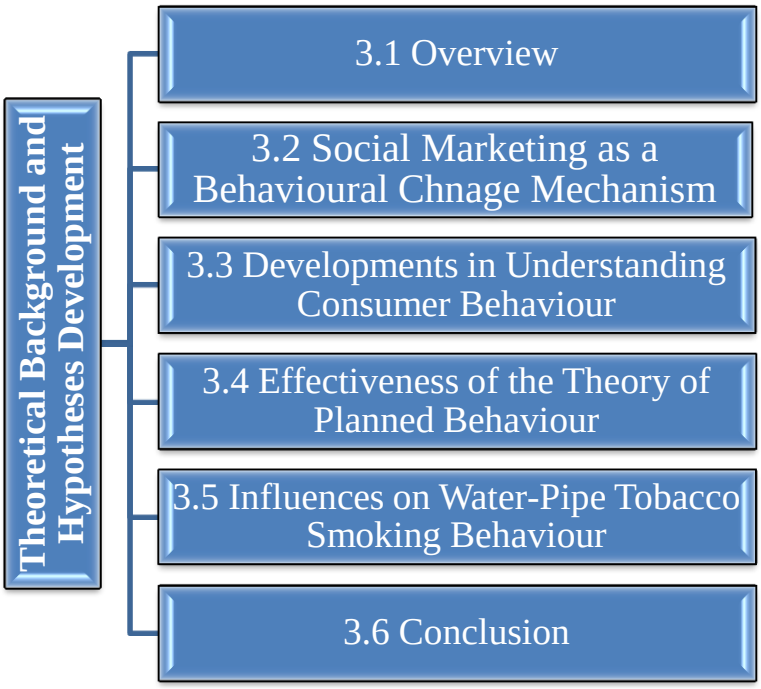

Figure 3-1: Theoretical Background and Hypotheses Development Outline

3.2 Social Marketing as a Behavioural Change Mechanism

Given the scarcity of health awareness programmes aimed at tackling WTS in the EMR and the Arab countries, it seems crucial that WTS, its drivers, and its consequences be thoroughly studied in a marketing context. Research on this matter can help in the design and execution of effective WTS cessation interventions (Maziak *et al.*, 2015). Widespread educational interventions may help reduce the social acceptability of WTS, especially among youth and young adults. Although strict policies and regulations regarding WTS are imperative for this period of time, it takes time and is expensive (Pollay, 2004). Hence, social marketing campaigns

that challenge WTS are considered an alternative means of promoting smoke-free behaviour as desirable (Hoek *et al*., 2011). Chapman and Freeman's (2008) research explained that these campaigns can help to develop new social norms that are not attuned with smoking, and help adjust people's mindsets to new regulatory initiatives.

The next section will define social marketing and its effectiveness in influencing behavioural changes within the smoking context.

3.2.1 Defining Social Marketing

In 1969, Kotler and Levy argued that marketing is a prevalent societal activity that does more than sell soap and toothpaste to consumers, but has a wider, more influencing role in society than understood, hereby broadening the older concept of marketing to comprise the transfer of marketing practices and principles to include services (e.g. education), persons (e.g. political candidates), organisations (e.g. World Health Organization) and ideas (e.g. smoking cessation).

The concept of social marketing is still in its early phase in the Middle East. However, the concept of social marketing dates back to 1952, when it was first introduced in an article by a sociologist, G.D. Wiebe. Wiebe argued that selling brotherhood and rational thinking can take the very same process as selling soap (Wiebe, 1951). From then on, many scholars strove to understand and develop the field of social marketing (Andreasen, 2003; Bartels, 1974; Kotler and Levy, 1969; Kotler and Zaltman, 1971; Kelly and Lazer, 1973). Andreasen (1994) finally cleared some of the confusion related to the concept of social marketing by developing a new definition, emphasising the use of social marketing as an operative marketing tool, taking it beyond educational purposes for a greater impact on society. He described social marketing as:

"*the application of commercial marketing technologies to the analysis, planning, execution and evaluation of programs designed to influence the voluntary behaviour of target audiences in order to improve their personal welfare and that of the society in which they are part of*" (Andreasen, 1994, p. 110)

Four main highlights should be stressed from Andreasen's (1994) definition. Firstly, social marketing uses the same technique and practice used in commercial marketing. Secondly, it is looked upon as a complete process (analysis, planning, execution and evaluation). Thirdly, it is

used to *influence voluntary change* in behaviour, not necessarily just promoting behaviour or aiming at actual change in behaviour (Andreasen 1994; 2002). This emphasis on the influence of voluntary behavioural change clearly distinguishes social marketing from its disciplinary competitors. The goal of a social marketing programme is to: *"make the target audience willing to accept new behaviour, reject potential behaviour, modify current behaviour, or abandon old behaviour"* (Kotler, *Roberto and Lee*, 2002, p. 5). Fourthly, social marketing programmes can benefit the targeted individual (e.g. breast cancer screening) or benefit the society (e.g. recycling), or benefit both parties concurrently (e.g. stop littering campaigns). In other words, marketers mainly use commonly known marketing principles and techniques to help promote social wellbeing and solve societal 'problems', offering individuals 'solutions' –or, in this case, promoting positive behaviour– to help solve a currently occurring social predicament.

Fox and Kotler (1980) noted that social marketing was an extension of social advertising; where the use of advertising as an effective tool to reach wider audiences was realised. When concerned with social causes and issues, Fox and Kotler (1980) argued that social advertising alone was insufficient. For example, the message may not have been well researched; people do not know how to act after viewing an ad; or simply due to masses of 'noise' in the communication process the ad would not reach the target audience and would be screened out.

Therefore, Fox and Kotler (1980) encouraged a wider use of marketing principles and methods beyond the sole use of advertising. Social marketers, both scholars and practitioners, have recognised that though products are often involved in behaviour change processes (such as condoms and pills in family planning campaigns), social marketing can also apply to such purely behavioural challenges such as resisting smoking (Moodie, MacKintosh, Brown and Hastings, 2008; Veer, Tutty and Willemse, 2008) and promoting healthier eating to adolescents (Chan, Prendergast, Grønhøj and Bech-Larsen, 2009). However, intervention programmes should be supported by more than just advertising in order to help those who seek behavioural change. For example, in a WTS cessation campaign, different forms of ads would be accompanied by hotlines for people who need to ask questions or direction, seminars that are hosted by health and social psychology experts who discuss the effects and challenges that are associated with WTS and the youth and young adults, and possible educational institutional visits for awareness.

Any social marketing effort that is done mainly addresses one or more of these four major arenas: health promotion, injury prevention, environmental protection and community involvement (Kotler and Lee, 2008). These efforts are usually done by three main sources:

1) *Public Sector Agencies:* such as the Ministry of Health in Egypt and local jurisdictions such as schools and community health clinics.
2) *Nonprofit Organisations and Foundations:* such as the American Heart Organization and the Food Bank in Egypt.
3) *Professionals working in a for-profit organisation:* holding positions that are responsible for activities such as corporate social responsibility, marketing and community relations.
4) *Professionals who provide services to organisations engaged in social marketing campaigns:* such as marketing agencies and marketing research firms.

To fully understand social marketing and its significance, it is important to note other approaches that are used to change public behaviour. This is because, in some behaviour, people need to be educated or need policies that will support this behavioural change. For example, people would be willing to efficiently use their home water supply, but do not know how to do that. In this example, education will need to go hand in hand with marketing interventions. Kotler *et al.* (2002) mentioned the use of technology, economics, legal (policymaking), and education as other substitutes for behavioural change. These alternates are a development from Rothschild's (1999) conceptualisation of the three mechanisms of education (inform or encourage people to voluntarily adopt a behaviour without incentive), marketing (involves attempts to influence behaviour in a voluntary *exchange situation* by providing the favourable choices, satisfactory cost-benefit ratio, convenient access and communication), and the law (use of coercions or punishment to reinforce behaviour).

The primary difference between education and marketing is that marketing involves the parties receiving something in return when involved in the process. And contradictory to the use of law, social marketing depends on the participant's adequate and voluntary change in behaviour, without the use of oppression. However, it is important to note that sometimes social marketing may not always be the best choice for behavioural change (Kaczynski, 2008). For example, when

the target audience lacks understanding in a certain social issue, education maybe a necessary alternative strategy to social marketing (Andreasen, 1994).

For further clarification and distinction between social marketing and other related or similar concepts, Andreasen (2002) proposed six benchmarks for identifying social marketing. Table 3-1 explains that any intervention or approach towards social marketing must embrace:

1) Behaviour change as a cornerstone used as an analysis and evaluation for interventions.
2) Consumer research (based on formative research) to understand full consumer experience and innermost needs and values. Intervention elements are routinely pretested before implementation and keen monitoring takes place throughout implementation.
3) Segmentation and targeting strategies to ensure effective reach of the aimed audience and efficient resource allocation.
4) Attractive and beneficial exchange proposition.
5) Four P's of the traditional marketing mix; as well as the addition of 'policy change' and 'people' or 'partnership' when needed (Luca and Suggs, 2010; McDermott, Stead and Hastings, 2005; Stead, Gordon, Angus and McDermott, 2007). This implies that there is a need to offer benefiting proposals and solutions to existing social problem (product), while minimising both the costs and price charged of adapting the behaviour (Kaczynski, 2008) (price); making the exchange accessible and convenient (place); and communicating the message that illustrates the desired behaviour through the right media vehicles preferred by the targeted audience (promotion). Policy change can be used if the desired behaviour can be further emphasised using a change in a policy. For example, introducing more fruit in the vending machine on a college campus could encourage healthier nutrition. This has been executed by changing the policy of the food service department at college (Shive and Morris, 2006). Using that same example, people or partnership at college would be the campus administration or the community in which this intervention took place. Their help is needed for a more effective intervention.
6) Dealing with the competition facing the desired behaviour to be adopted.

Table 3- 1: Six Social Marketing Benchmarks

Social Marketing Benchmarks	Description
1) Behaviour Change	Clear focus on behaviour, based on a strong behavioural analysis, specific behavioural goals
2) Consumer Research	Based on formative research to understand the consumer experiences, values and needs. Intervention elements are pretested with the target group
3) Segmentation and Targeting	Segmentation variables to select the target group; tailoring for the selected segment
4) Exchange	Incorporate an "exchange" analysis; understand what the person has to give to get the benefits proposed; consider incentives, rewards and disincentives
5) Marketing Mix	The traditional marketing mix, in addition to 'policy change', 'people' or 'partnership'
6) Competition	Both internal (psychological factors such as pleasure, desire, addiction etc.) and external (other influencers); competing forces to the behaviour change are analysed; strategies to remove or minimise the competition

Source: Luca and Suggs (2010), as adapted from Andreasen (2002)

With regard to the traditional marketing mix, some criticisms were stated regarding social marketing applicability. Among the various assessments of the model, Gordon (2012) argued that the four Ps model is short-term. Social marketing involves behaviour change that requires making long term commitments. In addition, criticism has been made that the marketing mix's internal focus is on the seller rather than the buyer (Constantinides, 2006). Many scholars critiqued this issue (Gordon, 2012). Kotler (2003), the main supporter of the traditional marketing mix, acknowledged this limitation as well. As such, Gordon (2012) proposed a new – or expanded– social marketing mix that: *"not only offers more tools to use in the behaviour change arena, but recognises strategies that are already being used. The various Ps of product, price, place, promotion, policy and people undoubtedly have a role to play. Other strategies such as stakeholder and community engagement, relational thinking, co-creation, advocacy, lobbying, public and media relations, and engagement in the policy agenda are often equally as important"* (p. 124). Figure 2-5 illustrates the new social marketing mix proposed.

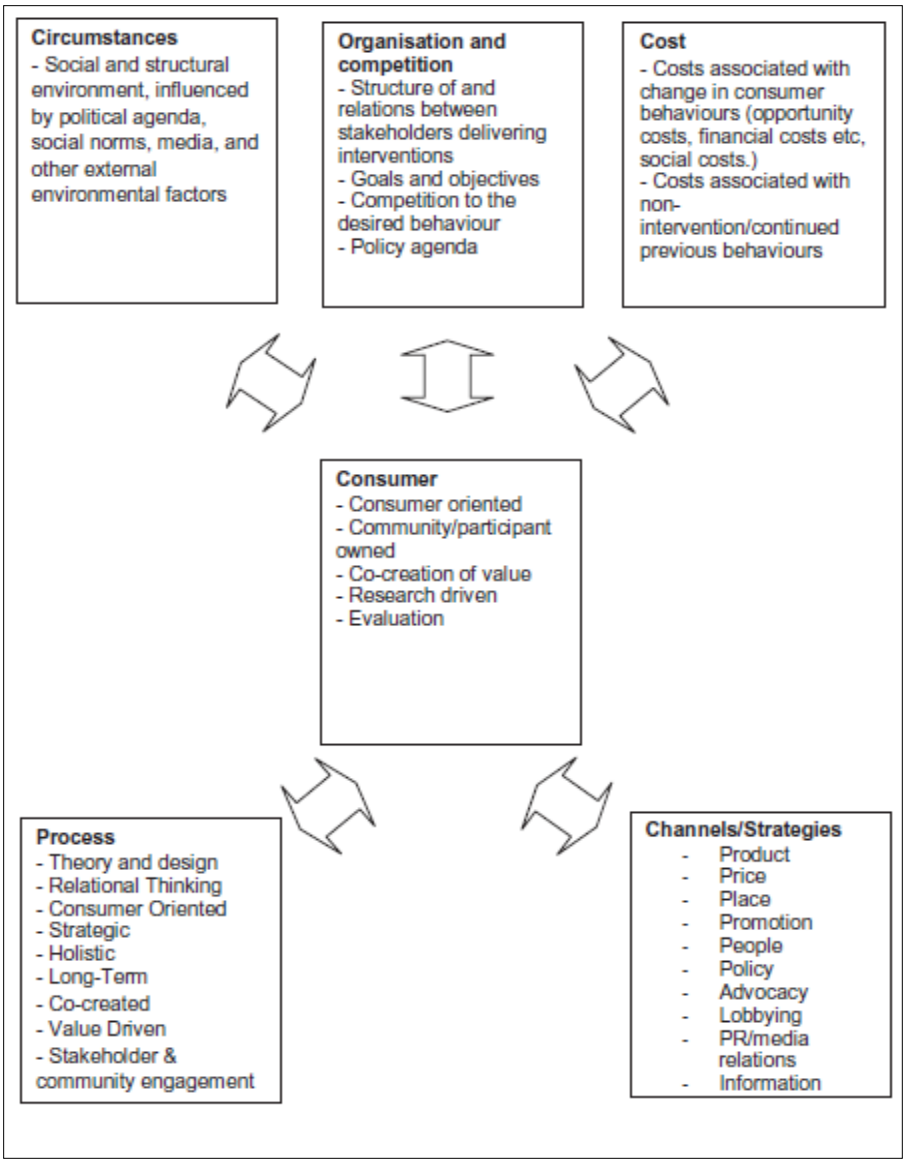

Figure 3- 2: The New Social Marketing Mix Proposed
Source: Gordon (2012)

In summary, prior studies in promoting prosocial behaviour found that marketing tactics can be helpful and effective tools in endorsing favourable behaviours and in creating social awareness. When discussing tobacco smoking cessation marketing practices, some of these social marketing efforts still need research to test their effectiveness. Nevertheless, prior anti-tobacco marketing campaigns, such as the *Truth* (will be discussed in Section 3.2.2), have proven their success in decreasing smoking rates over time. Hence, the next section provides a review of the effectiveness of various social marketing campaigns and interventions. These reviews discuss

anti-smoking movements that are handled through social marketing. However, this review of social marketing interventions is only done to further illustrate how this marketing study can help curb WTS among the youth and young adults by understanding consumer behaviour associated with WTS and the application of social marketing techniques for WTS cessation.

3.2.2 A Review of Social Marketing Campaigns

Social marketing efforts were designed to face smoking among different groups with diverse methods. It was realised that each group view smoking from a different perspective. Therefore, programmes that target youth are an important component of comprehensive tobacco control strategies (Hoek *et al.,* 2011). In application, both governmental and non-governmental organisations have launched numerous social campaigns, discussing problems that societies face daily. These promoted problems lack citizens' consciousness. Citizens either have little knowledge about, or need to be reminded that such tribulations exist and need to be acted upon. The following section reviews some of the social marketing campaigns and interventions designed to promote smoking cessation.

Effectiveness of Social Marketing in Smoking Cessation: The ongoing combat against smoking worldwide has led to several anti-smoking campaigns that have taken place in many forms. The following brief review discusses some of the anti-smoking campaigns and interventions that have run in various countries, tackling cigarette smoking as well as other forms of smoking, including WTS. According to the findings of these campaigns, some elements were found to be the main response drivers, and these are categorised as: message content and execution, targeting campaigns and warning labels.

Message Content and Execution

In February 2000 the American Legacy Foundation (Legacy) introduced the national *Truth* anti-tobacco marketing campaign. This campaign was the leading social marketing campaign of youth smoking cessation in the United States (Evans *et al.*, 2018). The campaign relied on the use of marketing tools, such as television advertising, billboards, print ads, and posters, as well as using a "countermarketing" strategy and creating a powerful, youth-focused brand that promoted the positive outcomes of refraining from smoking, by presenting an interesting and confident alternate lifestyle to smoking (Evans et al., 2016; Allen et al., 2009). Analysis of the

Truth campaign showed that it was a main reason behind the drops in the smoking behaviours of youths and young adults (Thrasher *et al.*, 2004). In addition, Farrelly, Davis, Haviland, Messeri and Healton (2005) underwent a study that found that from 1999–2002, U.S. adolescent smoking frequency dropped from 25.3% to 18.0%, having *Truth* account for almost 22% of that drop. The *Truth* campaign- now renamed The Truth Initiative (Evans *et al.*, 2018) is now making efforts into fighting hookah smoking in the States.

The theme and the message of the advertisement play a vital role in developing effective social advertisements. Research in Finland studied 325 high-school students (aged between 13 and 16), using a survey questionnaire that aimed to explore the effects of different message themes in anti-smoking advertisements on intention to smoke. Results revealed that advertisements demonstrating social effects influence attitudes towards smoking, negatively affecting their intention to smoke and therefore is most effective when designing anti-smoking advertisements targeted at adolescents (Uusitalo and Niemelä-Nyrhinen, 2008).

Sutfin and colleagues (2017) developed a point of sale health awareness campaign in the USA to decrease water-pipe tobacco and cigarillo smoking among adolescent and young adults (ages 16-25). The campaign development was divided into three phases in order to establish salient message beliefs, develop and evaluate established message executions, and test the campaign messages. According to the study, tobacco product users were more worried about the ingredients or constituents found in tobacco (such as arsenic and carbon monoxide) than the negative health effects of smoking (permanent breathing problems, infectious diseases and lung cancer). The participants also responded positively to a message execution where an image of an unpleasant product is paired with a constituent. Figure 2-6 illustrates the messages established for water-pipe tobacco and cigarillo smoking. The campaign resulted in an increase in the participants' risk beliefs and perceived harmfulness of WTS.

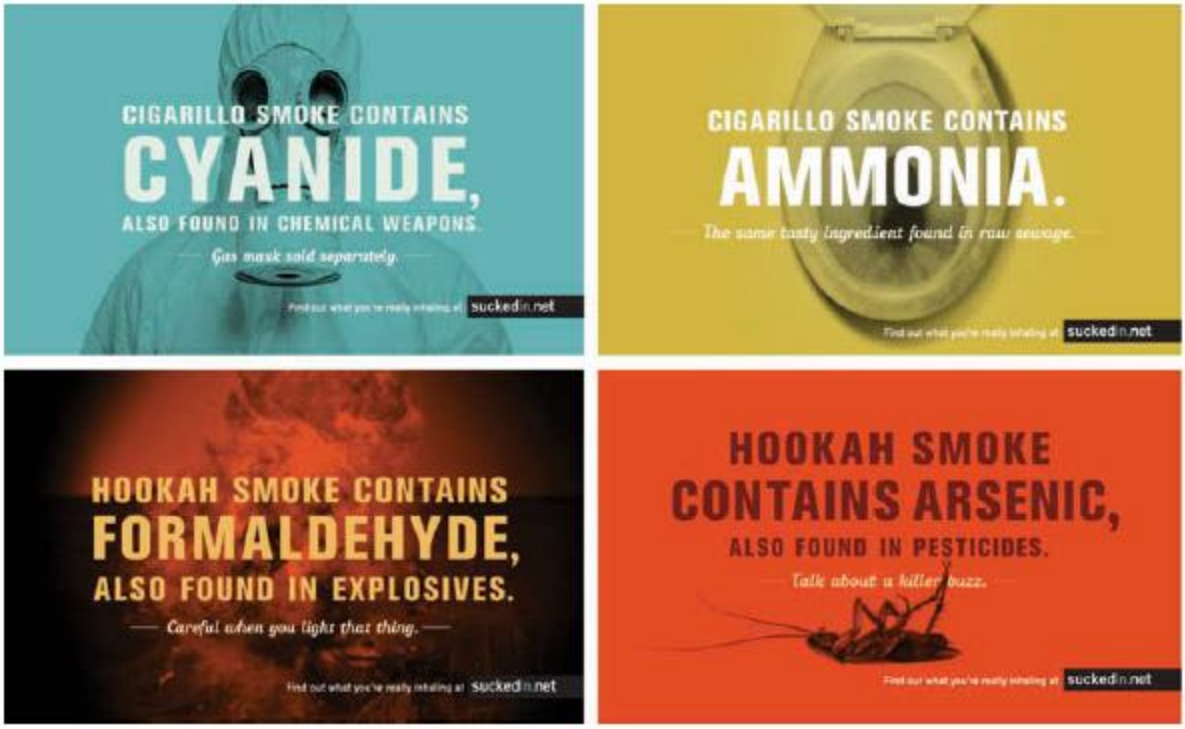

Figure 3- 3: Final Messages for Water-pipe and Cigarillos Chosen for Trial

In the UK, the London Borough of Barnet initiated a health promotion campaign. The campaign was conducted to address the misperception of people regarding the risk of shisha and its harms. The campaign included posters, digital utilisation of social media, sign posting to stop smoking, training and several other activities. One of the important posters for this campaign was the poster named *"The Truth behind the Smoke",* which is illustrated in Figure 3-4. A study was handled using the poster. In the study, three focus groups were initiated. The outcomes revealed that all the participants that responded to the poster did not have any emotional impact. The poster did not reveal any new information (London Borough of Barnet, 2017).

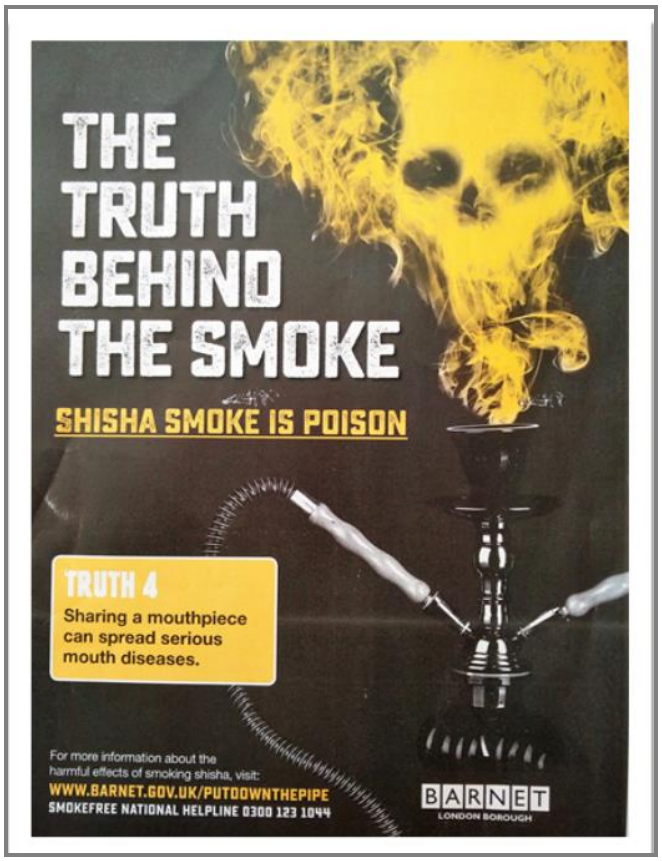

Figure 3- 4: "The Truth Behind the Smoke" Poster

Targeted Campaigns

In South Australia, an aboriginal-specific social marketing campaign (designed for the Aboriginal and Torres Strait Islander people) ran in 2011 under the name '*Give up smokes for good'*. Statistics showed a high prevalence of smoking within that segment (ABS, 2013), as compared to the non-Aboriginal population. Hence, a campaign was launched. The campaign's aim was to reduce the widespread habit of smoking among Aboriginal South Australians (Maksimovic, Shen, Bandick, Ettridge and Eckert, 2015). After the pilot phase of the campaign, face-to-face interviews with 190 participants were conducted to evaluate the campaign. Results showed that the campaign was able to raise awareness about how smoking caused illness. Most participants had strict rules about not smoking at home (73.2%) and in cars (75.9%). These findings illustrated that a well-executed, culturally targeted anti-tobacco social marketing campaign can be effective in tobacco smoking cessation.

In Malaysia, *"TAK NAK",* which translates to *"say no",* was the first national antismoking campaign to run in 2003 with the aim of controlling the prevalence of smoking, illustrating various smoking-related health problems. Specifically, the campaign's goal was two-fold: to help prevent the initiation of smoking among youth and women and to influence current smokers to quit (Lee *et al.*, 2015). The campaign ran in several languages (English, Bhasa Malaysia, etc.). It also used multiple media channels that included: mass media (such as television, newspapers, and cinema) and other collateral items (such as t-shirts and car stickers). Lee *et al.* (2015) conducted a study that examined the effectiveness of this campaign in having an impact on smoker's intention to quit. Results showed a high level of awareness of the campaign among the targeted audience. Findings revealed that information regarding the harms of smoking, fear arousal, and anti-smoking social norms affected the relation between the campaign's impact and intentions to quit smoking.

Anti-tobacco social marketing efforts and media campaigns are considered essential to comprehensive tobacco control programmes (Durkin, Brennan and Wakefield, 2012). Not only do these campaigns raise awareness regarding negative health consequences of smoking behaviour, but also help support the implementation of smoke-free laws. For example, Mexico City passed a smoke-free workplace law in 2008. This law prohibited smoking in all enclosed public spaces (Guillermo-Tenorio, 2008). Social marketing campaigns ran before and after the passing of the law.

These pre-implementation media campaigns ran to raise awareness about the dangers of smoking and the benefits of the law; while the post-implementation campaigns provided reinforcement, which it was argued may have accounted for the support and attitudes in favour of the law (Thrasher, Pérez-Hernández, Swayampakala, Arillo-Santillán and Bottai, 2010). Thrasher and colleagues (2010) assessed the impact of that social marketing campaign. They found that recall of any of the five campaign materials was 69%. Exposure to a greater number of campaign materials was associated with knowledge of the negative health consequences of cigarette smoking. Thus, this highlights that social marketing efforts and interventions can help establish smoke free norms within targeted societies.

Warning Labels

In a study combining both Canada (170 students from a secondary school in Montreal) and USA (126 students from secondary schools in a Southwestern state), the effectiveness of cigarette warning label threats on non-smoking adolescents was measured where participants visited a website that was sponsored by a famous cigarette brand or an unfamous cigarette brand. Three dependent variables were measured using a questionnaire: brand attitude, website attitude, and smoking intent. The study revealed that Canadian adolescents were more affected by the graphical warning labels and that the US sample were affected by no warning label, but on the contrary, graphical warning labels led to higher intentions to smoke (Sabbane, Lowrey and Chebat, 2009).

Moreover, the effectiveness of warning images and text in relation to text-only warnings was clearly highlighted. It was argued that people can change their behaviour by the evidence of the arguments in a message or by elements or cues surrounding the central message, which create emotion (music, popular spokesperson). In addition, research established that health-warning messages that have images and text are more influential than text-only messages. Images are attention grabbing and impact smoking cessation (Noar *et al.,* 2016). Figure 3-5 illustrates some European visual warnings tackling some smoking problems (Gallopel-Morvan, Gabriel, Le Gall-Ely, Rieunier and Urien, 2011).

Other WTS research suggested that warnings at the places where shisha smoking took place had more impact on individuals, as compared to warnings at the point of sale (Jawad, Bakir, Ali and Grant, 2015). Moreover, the warning signs that were placed on the water-pipe itself seemed to have an impact on the smoker. Islam *et al.* (2016) argued that the base, mouth-piece, and stem of the water-pipe were all clear and visible spots for a warning label.

Figure 3- 5: European Warning Messages

Figure 3-6 illustrates some warning labels used in Lebanon to face WTS. These labels were ineffective in practice because tobacco companies in the region are working on providing evidences that such warning labels are meant for cigarettes, and are not applicable to WTS. These tobacco companies follow and encourage the misperception that WTS is not harmful (as claimed by such companies) (Nakkash and Khalil, 2010).

Figure 3- 6: Health Warning Labels

There are some trials to battle habits of smoking in general, and smoking shisha specifically. These trials were not effective in achieving their target. Furthermore, reports indicated that there are insufficient regulations or policies to prevent such habits from being spread. This suggests that policymakers are not aware and do not have enough knowledge on how to intervene (Jawad *et al.*, 2018). Correspondingly, there might be other ways to intervene rather than the applied ones. Prior research indicated that the participants expressed that antismoking messages should

be more shocking. Antismoking messages should explain more how people could be impacted rather than claiming that such a habit is harmful (Boynton, 2016).

Prior studies revealed that the tactics used in cigarette smoking interventions may work with cigarette smokers, but can fail with other tobacco product smokers, such as water-pipe smokers. As such, it is vital to understand WTS behaviour, and the elements that may motivate/demotivate such behaviour. In order to design and execute effective social marketing campaigns and interventions, a theory that guides the social marketing approach is imperative. In fact, the social marketing benchmark mentioned earlier by Andreasen (2002) was updated in 2006 to include 'behavioural theory' as an established social marketing benchmark criterion. Research showed that 'behavioural theory' is part of antismoking campaign core structure (French and Blair-Stevens, 2006). According to Luca and Suggs (2013), the social marketing method depends on the proper use of theory in order to provide outlines and guides for developing interventions and programmes. Table 3-2 outlines some of the social marketing health interventions reviewed by Luca and Suggs (2013) in terms of their use of theory/model in their campaigns. According to their findings, theory and models were: (1) rarely used to guide the development of campaigns, (2) were not reported adequately, or (3) not clearly described in most articles studied. As such, a call for action for better reporting and the use of theory and model to guide interventions was strongly highlighted (Luca and Suggs, 2013). The same notion was supported by Manikam and Russell-Bennett (2016).

Table 3- 2: Theories and Models Used in Social Marketing Interventions

Theory or Model	Intervention and Topic	Article	How Used
Stages of Change/ Transtheoretical Model	Listening to Reason (smoking cessation)	De Gruchy and Coppel (2008)	Segmentation and evaluation
	Control Your Diabetes for Life (diabetes)	Gallivan et al. (2007)	Campaign design, segmentation and messages
	Move More Diabetes (diabetes)	Richert et al. (2007)	Segmentation
	Heart Truth (heart disease)	Long et al. (2008)	Campaign design

Theory or Model	Intervention and Topic	Article	How Used
Theory of Planned Behaviour	VERB (physical activity)	Huhman et al. (2007) Berkowitz et al. (2008) Berkowitz, Huhman, and Nolin (2008) Price et al. (2008) Heitzler et al. (2008)	Campaign design, segmentation and evaluation
	Get Up and Do Something (physical activity)	Peterson, Abraham, and Waterfield (2005)	Campaign design and evaluation
	Heart Truth (heart disease)	Long et al. (2008)	Campaign design
Theory of Reasoned Action	Get Up and Do Something (physical activity)	Peterson, Abraham, and Waterfield (2005)	Campaign design and evaluation
	Heart Truth (heart disease)	Long et al. (2008)	Campaign design
Health Belief Model	Control Your Diabetes for Life (diabetes)	Gallivan et al. (2007)	Message design
	Heart Truth (heart disease)	Long et al. (2008)	Campaign design
Social Learning Theory	Food Friends (nutrition)	Young et al. (2004) Johnson et al. (2007)	Promotion, message design
	Heart Truth (heart disease)	Long et al. (2008)	Campaign design
Social Cognitive Theory	VERB (physical activity)	Wong et al. (2004) Huhman et al. (2007) Berkowitz et al. (2008) Berkowitz, Huhman, and Nolin (2008) Price et al. (2008) Heitzler et al. (2008)	Campaign design, and segmentation evaluation

Source: Luca and Suggs (2013)

Reviewing and studying theories is vital since it aids social marketers to identify how a particular behaviour (such as WTS) is determined. Numerous theories exist, which explain the factors that can impact various behaviours, such as: attitudinal, normative, self-efficacy, other social considerations, or a grouping of these (Fishbein and Yzer, 2003). As such, social marketers can

then design the marketing mix of the social marketing campaign or intervention accordingly.The next section examines various social and health behaviour theories than can explain and predict WTS behaviour among Egyptian youth and young adults.

3.3 Developments in Understanding Consumer Behaviour: Theories of Behaviour and Values

Consumer behaviour has long been viewed as a Pandora's Box, full of furtive and complicated processes that research from various disciplines has been crucially examining for decades. Among these complex processes is the approach in which individuals choose to behave in a certain way in any given situation. The question of *"why do people do what they do?"* has mystified scholars for years. A large number of theories have been developed in order to answer questions relating to consumer behaviour. Research also recognised that it is imperative to initially understand what precedes behaviour, how it is developed, and what influences it. The following section explains the most prominent theories of social cognition and health behaviour. The applications and criticism of these theories are also discussed. Furthermore, justification for the chosen theories is offered and discussed in order to construct the research framework.

3.3.1 Theory of Planned Behaviour

One of the most popular theories of consumer behaviour is the *Theory of Planned Behaviour (TPB)* that has been developed by Ajzen (1985) as an extension for Fishbein and Ajzen's (1975), Ajzen and Fishbein (1980) *Theory of Reasoned Action (TRA).* The TRA describes volitional behaviour, excluding behaviour that is involuntary and unconsciously performed (Langer, 1989), e.g. quitting smoking; and behaviour that would need special skill or certain resources and opportunities to be done (Liska, 1984) e.g. wanting to buy a car but not having enough money to do it. The theory mainly posits that an individual's behavioural intentions are the strongest predictors of volitional, conscious behaviour, which is described as the readiness to engage in behaviour (Fishbein and Ajzen, 2010). Intentions are indications of how strongly people are willing to exert an effort in order to perform the behaviour (Ajzen, 1991).

It is discussed that under voluntary behaviour, the greater the intention to perform the behaviour, the more likely that it will translate into action. Behavioural intention is argued to be a function

of an individual's attitude towards the behaviour, and is also influenced by the individual's perceptions of the degree of approval of the behaviour from significant people in their life. The opinions and acceptance from the significant people are known as subjective norms. The TRA has been tested in numerous studies, and on a wide range of volitional behaviour, including dieting (Sejwacz, Ajzen and Fishbein, 1980), using condoms (Greene *et al.*, 1997), limiting sun exposure (Hoffmann, 1999), and smoking (Guo *et al.*, 2007). Figure 3-7 describes the basic components of the TRA.

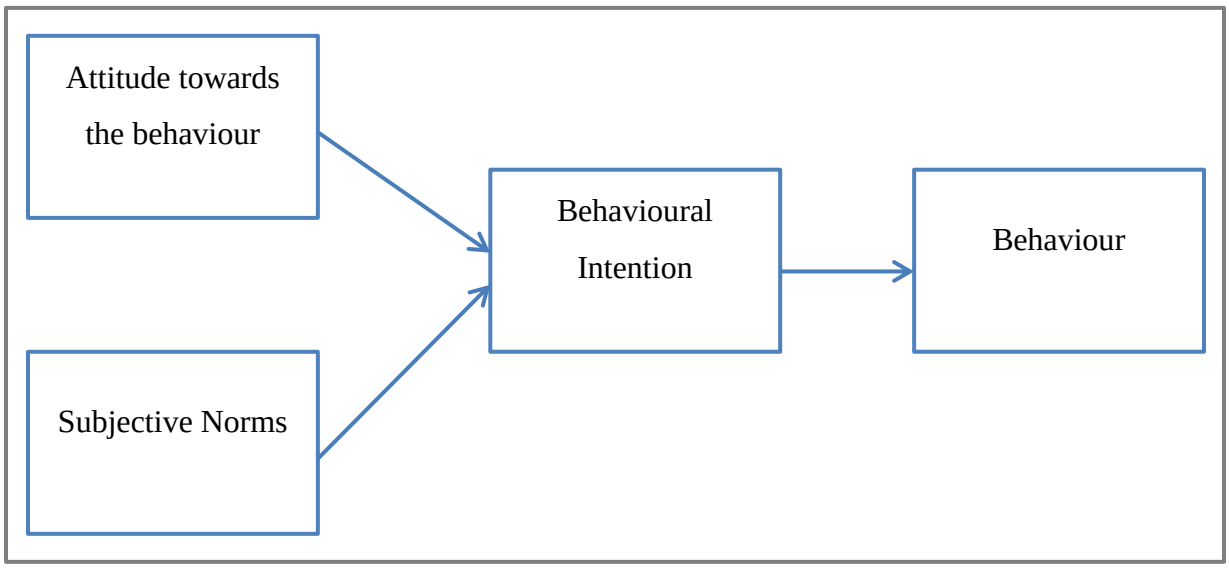

Figure 3-7: Basic Components of Theory of Reasoned Action
Source: Fishbein and Ajzen (1975), Ajzen and Fishbein (1980)

Even though the theory has proved its success to predict volitional behaviour in many studies, many scholars have criticised the TRA. The criticisms of the theory have mainly been on the grounds that the components of the TRA may not sufficiently predict intention and behaviour, and that the theory is only useful to predict volitional behaviour, where many of our day-to-day behaviours are, in fact, not fully volitional (Hale, Householder and Greene, 2002). Hence, the TPB was developed, expanding on the TRA. The TPB adds another component, perceived behavioural control (PBC), to the model. The TPB, like the TRA, is an individual level theory that also states that behavioural intentions are the best predictors of behaviour. However, it does not only describe volitional behaviour, but also includes behaviour that individuals might not have full control over. The theory postulates that three main components make up an individual's behavioural intentions: attitude, subjective norms, and PBC.

According to the TPB, an attitude is an: "*effective response toward performing some behaviour and not toward some generalized attitude subject"* (Hale *et al.,* 2002, p.260). In other words, it can be simply described as the cognitive-affective evaluations of a given behaviour. Although the origin of attitude and its development is heavily debated within the field of social science, attitudes are generally formed by the beliefs, values, and assumption people hold (Chaudhuri, 2006). Fishbein and Ajzen (1975) coincide with this view, conferring Fishbein's (1963, 1967) *summative model of attitude* that is derived from the attitude formation theory, *expectancy-value theory* (Feather, 1959, 1982).

The summative model of attitude argues that an attitude towards performing behaviour is a function of the beliefs that one holds regarding the behaviour. Accordingly, the beliefs that make up attitude are a combination of belief strength (the certainty with which the belief is held) and belief evaluation (the extent to which the attribute is to be judged favourably or unfavourably) (Hale *et al.,* 2002). The beliefs that lie behind a person's attitude toward the behaviour are termed behavioural beliefs, and are viewed to link some attribute to an attitude (Ajzen, 1985). For example, the belief "Dieting will help me lose weight" links the attribute "weight loss" with the behaviour "dieting". Along the same lines, the belief that "Smoking a water-pipe will make me sociable" links the attributes "sociability" with "water-pipe smoking". Here, the belief strength would be this person's certainty or uncertainty that smoking will help him/her to be sociable and the belief evaluation would be this person's evaluation of whether sociability is a positive or negative outcome.

The TPB also suggests that social pressures can influence behavioural intentions (Fishbein and Ajzen, 1975). This social pressure is translated through an individual's belief of whether the people he/she regards as important and wishes to comply with approve or disapprove of the behaviour at hand. This is commonly known as an individual's *subjective norms*. For example, if a person perceives that significant people in his/her life think he/she should not smoke, then this person will feel socially "pressured" into avoiding smoking. On the other hand, if the people surrounding this person feel that smoking is not frowned upon and is seen as socially acceptable, then that person will not feel pressured to quit and will continue or resume smoking. Subjective norms are also viewed to be a function of beliefs, known as *normative beliefs*. Normative beliefs are an individual's perceived expectations of significant others regarding the behaviour (Ajzen,

1985). Subjective norms are also argued to be influenced by the *motivation to comply* with these normative beliefs, that is, the real or illusory pressure one feels for his or her behaviour to meet with the expectation of others (Hale *et al.*, 2002).

As mentioned earlier, the TPB extends the TRA by adding the PBC in order to explain behaviours that are not totally volitional and not under one's control (e.g. WTS). PBC refers to the perceived ease or difficulty of performing a behaviour. It is considered a predictor of behavioural intention, along with attitude towards the behaviour and the subjective norms (Ajzen, 1985). In fact, PBC is said to be an important factor in the theory, especially with its direct impact on actual behaviour. It has a greater psychological impact than actual control (Ajzen, 1991). Like attitudes and subjective norms, PBC is also seen to be a function of beliefs, that is, control beliefs (the presence or absence of essential resources and opportunities to perform the behaviour) and perceived power (the ease or difficulty of performing the behaviour).

According to Ajzen (1991), these control beliefs maybe be the result of an individual's past experiences with the behaviour at hand; it can be influences of transferred information about that behaviour through friends, family or acquaintance; or other factors that makes performing a certain behaviour easier or more difficult. The PBC has been compared to several other concepts of control, such as locus of control (Rotter, 1966) and the expectancy of success (Atkinson, 1964). Research has showed that Bandura's (1977, 1982) self-efficacy concept is the closest term in describing PBC. The concept of self-efficacy is defined as an individual's judgment of how well he/she can accomplish a series of actions that are required to deal with future situations. Figure 3-8 provides a graphical illustration of the main components of the TPB.

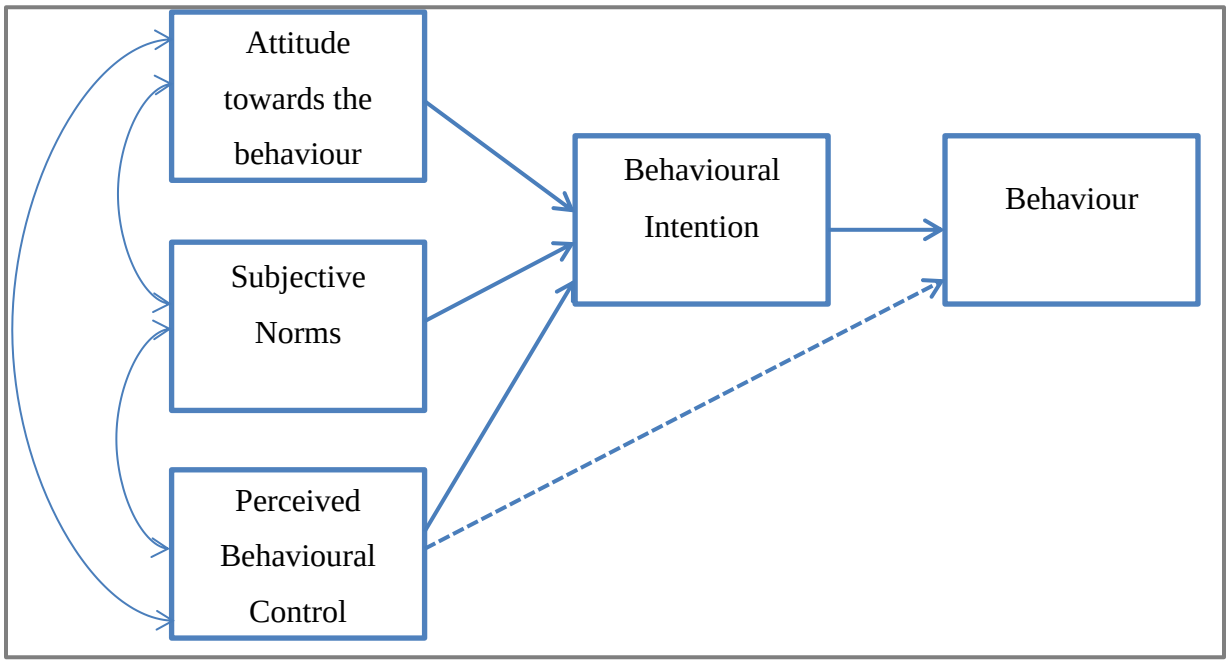

Figure 3-8: Basic Components of Theory of Planned Behaviour
Source: Ajzen (1985)

According to this illustrated figure, if someone's attitude towards behaving in a certain way (e.g. smoking) are favourable, and the opinions of his/her significant other are perceived to encourage that behaviour (views smoking as stress relieving or sexy), and the given behaviour in easy to conduct (accessibility and ease of smoking), then this individual will develop strong intentions to smoke, and therefore engage in smoking. The impact of the attitude towards the behaviour, the subjective norms, and the PBC may vary across different behaviours, and may depend on aspects such as controllability and context (Ajzen, 1991).

Since the introduction of the TPB during 1985, the theory has become one of the most frequently cited and significant models for predicting human social behaviour (Ajzen, 2011). The TPB has been applied to numerous studies, investigating a wide variety of social behaviour. These studied behaviours include: binge drinking (Todd and Mullan, 2011), environmental participation (Wauters, Bielders, Poesen, Govers and Mathijs, 2010), adolescence smoking (De Vries *et al.*, 1995; Harakeh, Scholte, Vermulst, de Vries and Engels. 2004; Su, Griffiths, Gao, Lau and Mo, 2015), safer sex (Bowen, Williams, McCoy and McCoy, 2001), adolescent workplace safety (Guerin, Toland, Okun, Rojas-Guyler and Bernard, 2018) and other behaviour. Regarding health behaviour research, the TPB is commonly used and has been able to predict smoking in several cross-sectional and longitudinal studies (Su *et al.*, 2015).

The TPB is extensively used and tested in research. However, the theory has been attacked on several bases. Some criticism in prior studies referred to the causal relationship between PBC and intentions and the sufficiency of the TPB components to explain behaviour without any other additional component (Hale *et al.*, 2002), such as emotions, the role of past behaviour (Kor and Mullan, 2011; Norman and Cooper, 2011), and other components that are assumed to strengthen the predictive abilities of the TPB.

The field of psychology witnessed a heated argument between fellow psychologists when a group of scholars recently called for the TPB to be retired (Sniehotta, Presseau and Araújo-Soares, 2014), due to concerns regarding the validity and the utility of the theory. All of these criticisms were addressed and clarified by Ajzen (2011, 2015) who emphasised the validity and endurance of the TPB, under a commentary with the title *"The TPB is alive and well, and not ready to retire".* Other scholars (Armitage, 2015; Conner 2015; Gollwitzer and Oettingen, 2015; Ogden, 2015) also commented on the controversy. Sniehotta *et al. (*2014) added similar commentaries for the theory to retire.

Three out of four commentaries differed with Sniehotta *et al. (*2014), suggesting that the TPB should not be retired. Specifically, it was argued that research should move towards extending the theory (Conner, 2015) and that future research should use the theory as a benchmark for upcoming theories (Armitage, 2015). In addition, it was suggested that action theories, like the TPB, should be adapted to studies of health psychology or the creation of health behaviour interventions (such as this study), to better fit the purpose of research (Gollwitzer and Oettingen, 2015). Only Ogden (2015) agreed with Sniehotta *et al.* (2014), claiming that the TPB was stating the obvious, stating that he had planned this retirement party 10 years ago, demanding that the field is looking for something more novel and exciting.

Given all supporting and opposing arguments, this study follows the recommendations of Conner (2015) and Gollwitzer and Oettingen (2015). This study adapted and used the TPB as an underpinning theoretical foundation for its research, while expanding it in order to investigate WTS among youth and young adults. Other behavioural theories were also considered for this study (Health Belief Model, Trans-Theoretical Model of Health Behaviour Change, Social Cognitive Theory, Integrative Model of Behavioural Prediction, and Value-Belief-Norm Theory). Nevertheless, these theories were found to be less compatible with the nature of the

research, and do not fully tackle and address the study's researchable question and objectives. Still, this study reviews the theories and works of prior studies and explains them in the following paragraphs. This thorough review of these theories under consideration is important in highlighting how the theory that underpins this study is most fitting to address the researchable question and objectives of this study. This review also outlines the work undertaken regarding the theoretical framework and the construction of the conceptual model of the study.

3.3.2 The Health Belief Model

Among the earliest health specific social cognition philosophies and concepts is the Health Belief Model (HBM). This model was developed in the 1950s. The initiators were Rosenstock, Becker and/or Janowitz (Becker, 1974a, 1974b). The aim of the HBM was to explain health behaviour. The focus of their study was on preventive health behaviour, encouraging better choices that reduce health risks. The two main determinants of health-related behaviour that the model tackled were perceptions of threats and expectations about behaviour. The model incorporated five core constructs: (1) perceived severity, (2) perceived susceptibility, (3) cues to action, (4) perceived benefits, and (5) perceived barriers (Rosenstock, 1974). The HBM was further developed, adding other vital variables. For example, Rosenstock, Stretcher and Becker (1988) added the variable "self- efficacy" to the model. Self-efficacy referred to one's belief in their abilities to engage in protective behaviour (Bandura, 2004). This extension was viewed to be imperative to improve the HBM's main framework. Figure 3-9 clarifies the HBM assumption and provides illustrations of each variable.

The HBM is recognised to explain that an individual will avoid behaving in a way that would damge their health if: (1) they perceive any threat that may arise from this behaviour; (2) they are convinced that avoiding that behaviour will increase health benefits and decrease the threat; (3) they believe that they have enough self-confidence to engage in an action plan against that health damaging behaviour, given available skills and resources. For example, in the context of this current study, a person will take steps towards stopping WTS if: (1) they feel that lung cancer or other negative health-related consequence is caused by WTS; (2) they have a positive expectation that by stopping WTS, they will avoid negative health related consequences; (3) they believe that WTS cessation is possible, given that there are healthier options.

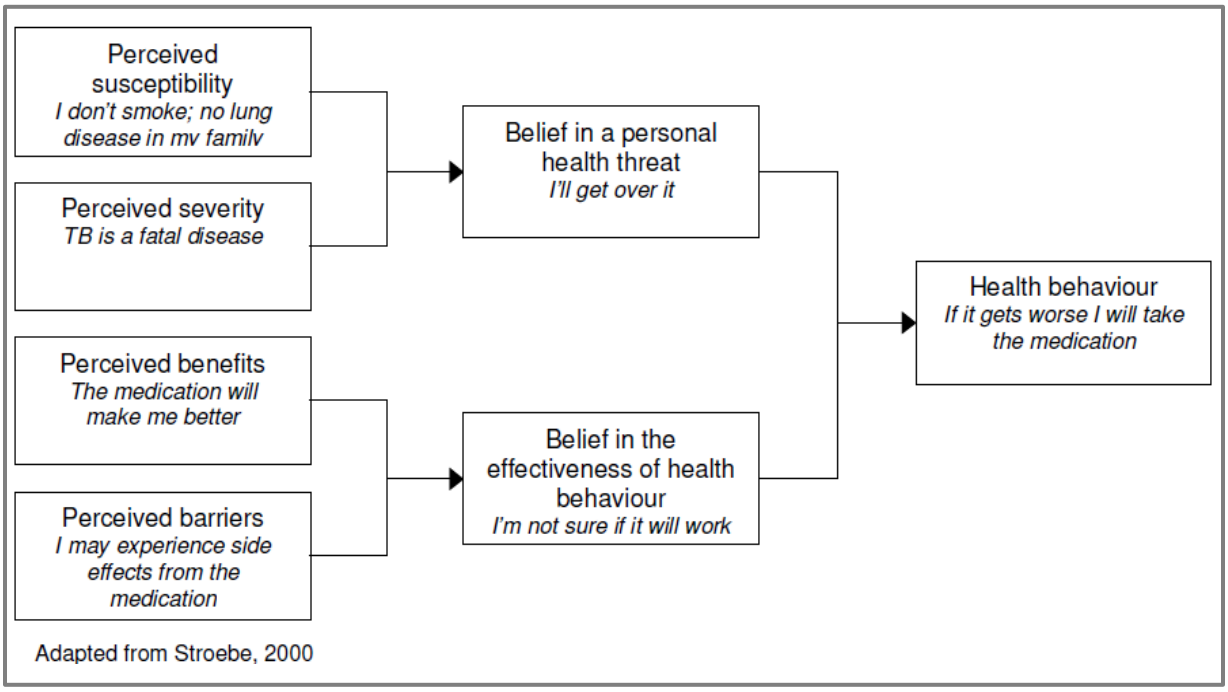

Figure 3-9: The Health Belief Model (Janz and Becker, 1974; Rosenstock, 1974)

Source: Munro, Lewin, Swart and Volmink (2007)

HBM is a model that has been numerously applied in the study of health behaviour (Jones, Smith and Llewellyn, 2014). However, HBM does not take into consideration the effect of socialisation and social pressure on individual behaviour, such as social pressure found in the context of WTS. It also ignores reasons that are not health related by which we take health-related decisions (Munro *et al.,* 2007). For example, a person might refrain from using condoms because it might be perceived by their partners as mistrust. On that same note, a person might engage in WTS because he/she wants to be viewed as "cool" among his/her friends, conforming to their friends' smoking behaviour. Further, Munro *et al.* (2007) criticised the HBM as it ignores the influence of beliefs, attitudes and unconscious motivations on a health issue. Armitage and Conner (2000) identified another limitation to the model. They argued that part of the model's weak predictive capabilities was in part a result of poor construct definition. Accordingly, this study further explored other theories and models that can predict social and health behaviour.

3.3.3 The Trans-Theoretical Model (TTM) of Health Behaviour Change

Prochaska and DiClemente (1983, 1984, 1986); Prochaska, DiClemente, and Norcross (1992) developed the Trans-Theoretical Model (TTM) to improve the effectiveness of psycho-

therapeutic efforts and to tackle the harm caused by tobacco smoking (Burkholder and Nigg, 2002). TTM is also known as the stages of change (SoC). Figure 3-10 illustrates the TTM, which has been applied in various contexts including alcohol treatment (DiClemente and Hughes, 1990), smoking cessation (DiClemente *et al.*, 1991), and breast cancer screening (Bridle *et al.*, 2005). According to TTM, individuals go through similar stages of change regardless of the therapy they were undergoing. The model proposed five different stages: *precontemplation* (no plans to change behaviour), *contemplation* (thinking about changing behaviour), *preparation* (preparing for behavioural change), *action* (actively engaged in behavioural change) and *maintenance* (attempting to sustain behavioural change).

Although all individuals are assumed to go through these stages, the rate at which each individual advance from one stage to another will vary greatly between each person and their behaviour (Armitage and Conner, 2000). In the context of this current study, a water-pipe smoker might view this activity as harmless and have no intention of quitting (*precontemplation*). They might reconsider this behaviour for various reasons, such as social or health factors. Accordingly, they will begin to consider quitting (*contemplation*). They will begin to take positive steps towards quitting WTS. For example, they might search for a new hobby or social activity that will fill up their leisure time. They may also consider buying healthy substitute products to replace WTS, such as nicotine gum (*preparation*). Once they find the product or activity that they feel comfortable with, it will serve as a replacement for WTS (*action*). When they enjoy the activity and/or product, they will continue WTS cessation (*maintenance*). However, it is possible that a person who attempts to quit WTS might reach a certain stage and then relapse and start smoking again.

TTM has received practitioner support ever since its development. However, it has received less research support of its efficacy (Michie and Abraham, 2004). Criticisms of the model include inadequately defining the stages in the model, creating massive heterogeneity in its application in various health behaviour studies. Bandura (1997) argues that the human function is too complex and multidimensional to divide into discrete stages. Moreover, Armitage and Conner (2000) argued that the model provides insufficient information on how people change and why some individuals succeed while others do not. Furthermore, there are concerns regarding the model's ability to integrate social and economic factors, and the validity of the SoC when applied to

smoking cessation and changing other addictive or non-addictive behaviour (West and Hardy, 2006). Moreover, prior research explained that the use of cross-sectional research-based data was found to be meaningless. It does not demonstrate the validity of the model's SoC hypotheses, as opposed to longitudinal research-based data (Armitage and Conner, 2000). Due to these vital criticisms, this research did not use this model and further sought other models.

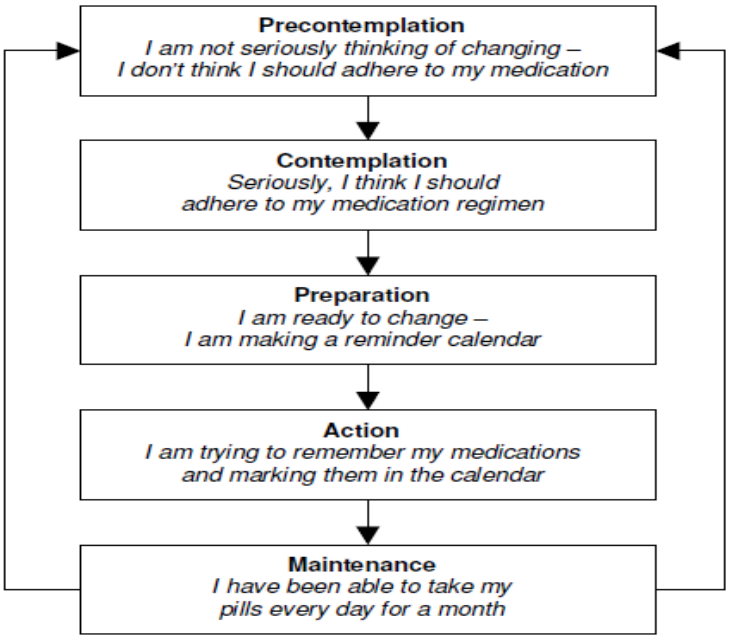

Figure 3-10: The Trans-Theoretical Model
Source: Munro *et al*. (2007)

3.3.4 Social Cognitive Theory (SCT)

The social cognitive theory (SCT) is considered to be one of the most comprehensive theories of behaviour change that has been developed (Redding, Rossi, Rossi, Velicer and Prochaska, 2000). This theory relies on the principle of reciprocal determinism, where there is an ongoing triad relationship between an individual, the environment, and the behaviour. Bandura (1986) explains that a person's general behaviour is determined by self-efficacy and outcome expectancies. These outcome expectancies can be in the form of evaluations of the expected behaviour outcome (positive or negative) and social outcomes (acceptance or rejection of the behaviour by the social groups surrounding an individual). Moreover, a person's self-evaluations of their behaviour, their perceived facilitators, and barriers, may also influence the outcome (Munro *et al.*, 2007).

Individual and environmental factors act together to stimulate a certain response or behaviour, thus influencing that behaviour. In brief, the SCT recognises that a certain behaviour takes place when a person perceives control over the outcome; recognises the benefits of performing the behaviour; identifies few barriers in taking the action; and feels like he/she can perform the behaviour (Armitage and Connor, 2000). Figure 3-11 illustrates the SCT.

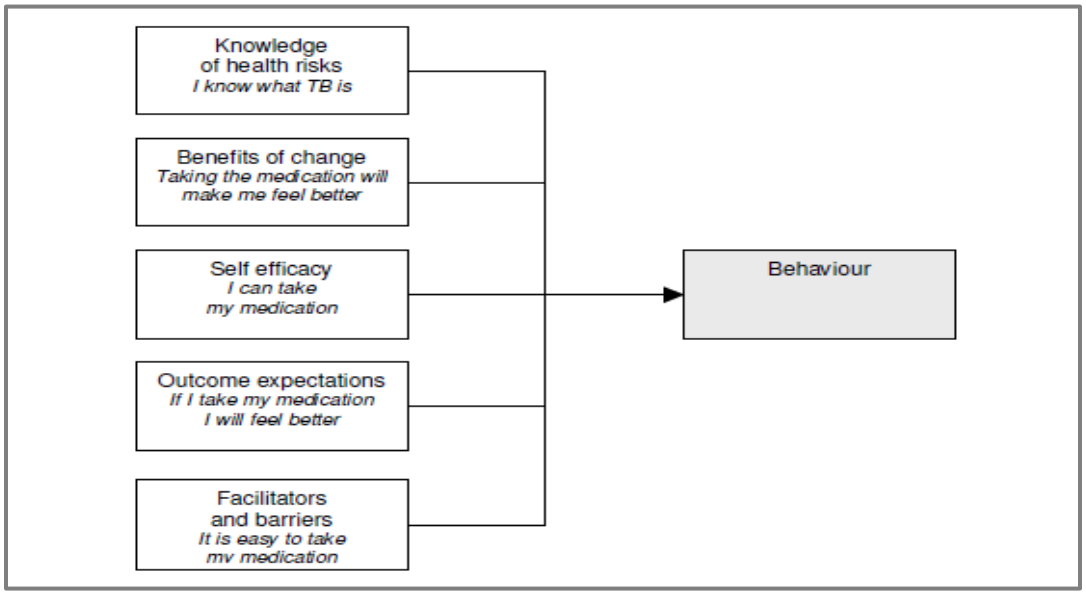

Figure 3-11: The Social Cognitive Theory (Bandura, 1986)
Source: Munro *et al*. (2007)

When applying the SCT in the context of WTS, water-pipe smokers would quit once they become familiar with the negative health consequences of WTS; understand the benefits of WTS cessation; feel like they have the ability and determination to quit; develop expectations that they will become healthier when refraining from smoking; and recognise that there are few restraints to the process of quitting WTS.

The SCT has been used to predict a wide range of health behaviours. However, scholars feel that the main focus for using the SCT was the self-efficacy component more than the model itself (Bandura, 1997), and its central role in other models of health behaviour, such as the TPB. In addition, complexity of the SCT's interrelating factors makes it difficult to fully operationalise the model as a whole, compelling scholars to apply part of the model (Stone, 1999). Due to the criticisms of the SCT, this research was motivated to use a modifed TPB model instead of the

SCT. The reason for this decision is that according to prior studies, the main contribution of the SCT was the self-efficacy variable, which is also incorporated in the TPB.

3.3.5 Evolutions of the Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPB)

Some scholars have extended the TRA and the TPB by introducing new theories and models that predict different behaviour. In this section, the integrative model of behavioural prediction and the value-belief-norm theory of environmentalism are reviewed.

Value-Belief-Norm Theory of Environmentalism: Stern, Dietz, Abel, Guagnano and Kalof 1999) and Stern (2000) have developed and tested a conceptual framework to explain environmentally significant individual behaviour known as the value-belief-norm (VBN) theory. This theory is an extension of three theories: The Universal Theory of Human Values (Schwartz and Bilsky, 1987), the Normative Influence Model (Schwartz, 1970, 1977) and the New Ecology Paradigm (Dunlap, Van Liere, Meryig and Jones, 2000). This theory explains that pro-environmental behaviour develops when an individual's personal values are believed to be under threat, and he/she believes that actions initiated by him/her can help lessen the threat and re-establish those important values (Stern *et al.*, 1999). Figure 3-12 displays the VBN model.

VBN theory adds to Ajzen's (1991) TPB, indicating that environmental beliefs are preceded by personal values. This is in line with Ajzen's view that beliefs (attitudes towards the behaviour, perceived behavioural control) antecede behavioural intentions, which then leads to actual behaviour (Oreg and Katz-Gerro, 2006). When it comes to the WTS context, smokers will consider quitting once they realise that they might be harming their environment and the people around them (*altruistic, biosphere, egoistic values*). Thus, they develop the belief that quitting can lessen this environmental threat. They feel obligated to behave in a pro-environmental manner and form intentions to become eco-friendly.

The VBN theory has been used to successfully investigate various environmental behaviours, including sustainable travel mode choices (Lind, Nordfjærn, Jørgensen and Rundmo, 2015), and willingness to pay for park conservation (López-Mosquera and Sánchez, 2012), and has also been applied to predict pro-environmental behaviour (Chen, 2015). Yet, the application of the VBN theory is mainly confined to environmental and ecological studies. Since the main focus of

this study is not on pro-environmental aspects that lead to WTS cessation, the VBN model is not applied in this thesis.

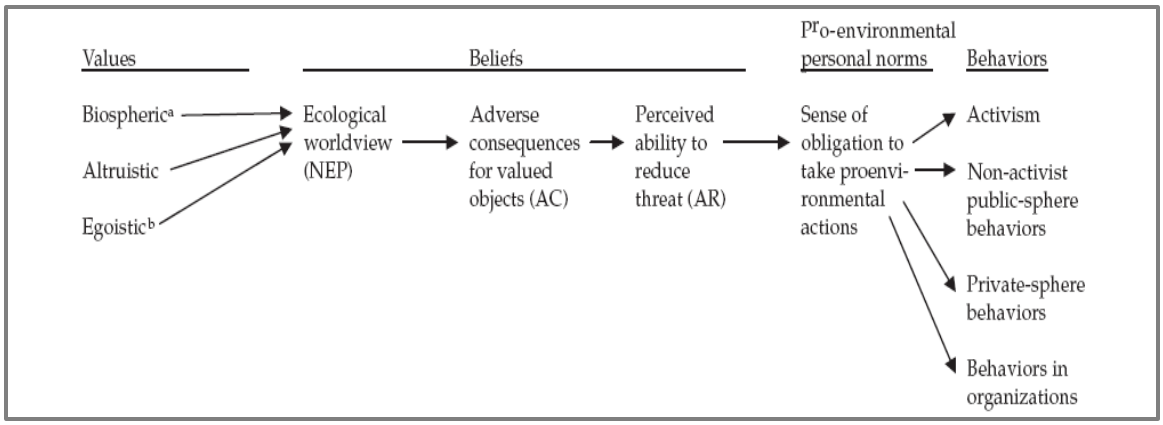

Figure 3-12: The Value-Belief-Norm of Environmentalism
Source: Stern (2000)

Integrative Model of Behavioural Prediction (IMBP): The importance of using theory in order to design effective health promotion strategies has led recent research that has focussed on testing and developing new theories that can help in the prediction of health behaviour. With this goal in sight, several behavioural theories were examined and compared in order to determine key variables that predict behaviour and influence behavioural change. Fishbein *et al*. (2001) have combined main constructs from the TRA (Ajzen and Fishbein, 1980) and the TPB (Ajzen, 1991) as well as the SCT (Bandura, 1986) and the HBM (Becker, 1974a) to introduce the integrative model of behavioural prediction (IMBP).

This model builds on the assumptions of the TRA and the TPB that intentions are the primary determinant of behaviour, which in turn is a function of attitudes, subjective norms and self-efficacy or perceived behavioural control, as some studies use them interchangeably (see Robbins and Niederdeppe, 2015). Attitudes are viewed as the positive or negative evaluation of the outcomes of a given behaviour. Subjective norms refer to an individual's perception of whether the significant people in his/her life approve or disapprove a given behaviour. Self-efficacy refers to a person's perceived confidence that they can perform a given behaviour under challenging circumstances (Fishbein and Yzer, 2003). The IMBP also argues that a person's skills and environmental constraints moderate the relationship between intentions and actual behaviour (Fishbein *et al*., 2001).

Figure 3-13 shows the IMBP. The model draws from the TPB by postulating that the three main determinants of intention (attitudes, subjective norms, self-efficacy) are influenced by their beliefs (behavioural, normative and control) respectively and are known as proximal variables. Distal variables, on the other hand, are background variables that influence intention and behaviour, but indirectly (Fishbein and Yzer, 2003). These variables include demographic variables, such as age and gender, culture, past behaviour, attitude toward targets, personality traits and moods, media or intervention exposure and other individual difference exposure.

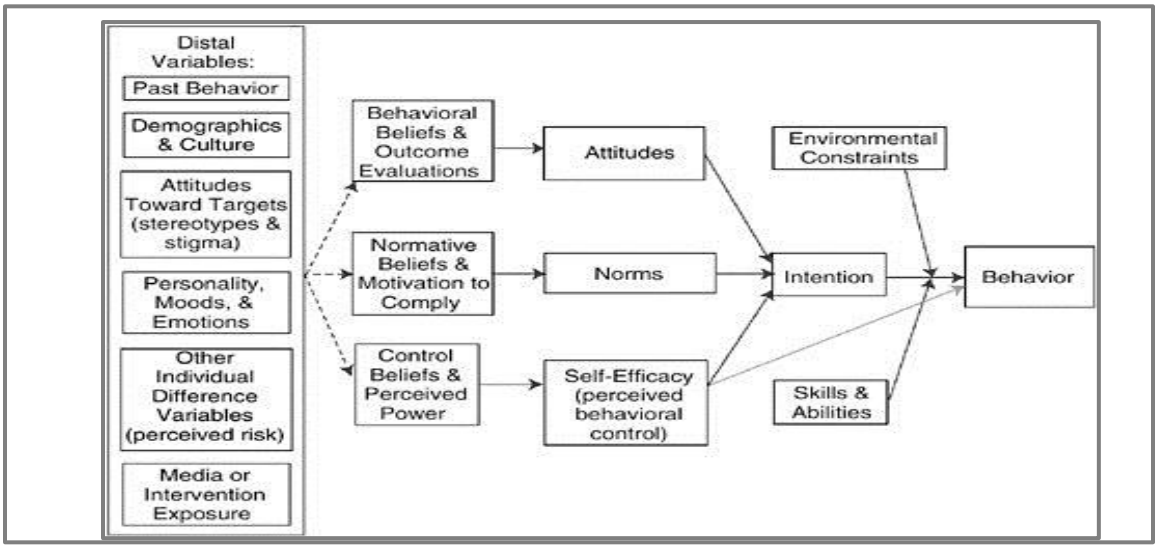

Figure 3-13: Integrative Model of Behavioural Prediction (Fishbein, 2000)
Source: Fishbein and Yzer (2003)

Ever since its development, the IMBP has been applied to predict various health and non-health related behaviour, such as mother-adolescent sexual communication (Byers, Sears and Hughes, 2018), using social media while watching mediated sports events (Wang, 2013), condom usage (Rhodes *et al.*, 2007) and pro-smoking information scanning using social media (Zhu, 2017). However, it is important to note that while reviewing some of the IMBP studies, it has been noticed that the application of the model across various studies over time has varied, commonly testing parts of the model but few who have fully tested the model (e.g. Byers *et al*., 2018; Mello and Hovick, 2016). Thus, many studies appear to test the TPB, adding one or two variables from the IMBP (Byers *et al*., 2018).

The current study finds that the TPB comprises the main elements of the IMBP that are significant and are confirmed by prior studies as being vital to predicting intentions to behave.

Furthermore, the IMBP was not used due to prior criticism that not many studies have fully tested the model. Thus, the validation of the variables being influential determinates of behaviour is not strongly supported by earlier research. As such, by adopting the TPB as the theoretical base of this research, this thesis builds upon and extends the TPB in order to construct a model that can predict WTS among the youth and young adults. The next section provides a comprehensive discussion of the effectiveness of the TPB in predicting intentions and behaviour in several behavioural domains, including smoking.

After comparing the theories presented earlier, it is argued that integrating and expanding the TPB into the conceptual model will provide a better understanding of the social and personal effects in predicting WTS behaviour. Along with the other constructs and influences that are incorporated, it will aid in the planning and designing of social marketing campaigns and interventions that can influence behavioural change (i.e. water-pipe tobacco smoking cessation). The following section highlights the effectiveness of the TPB as applied in various contexts for behavioural prediction.

3.4 Effectiveness of the Theory of Planned Behaviour

As mentioned earlier, the TPB states that intention is considered to be the main predictor of behaviour and according to evidence from empirical studies for over 26 years, it is. Reports show that, without the contribution of any additional variables to the theory, intention explains about 20-40% of variance in behaviour, while other antecedents of intention (attitude towards the behaviour, subjective norms and PBC) account for 40% to 50% variance in intention (Ajzen, 1991; Armitage and Conner, 2001; Godin and Kok, 1996; McEachan, Conner, Taylor and Lawton, 2011; Steinmetz, Knappstein, Ajzen, Schmidt and Kabst, 2016). Some studies that are reviewed in this section have extended the TPB by adding other variables to enhance the behavioural predictive ability of the TPB. Other scholars in the field have recently argued that future research should extend the theory in order to develop it (Conner, 2015), as this thesis carries out to do by integrating the TPB with other theories (Theory of Basic Values), consumer socialisation and other individual-level constructs that are thought to influence WTS among the youth and young adults. The predictive capabilities of the TPB have been tested and effectively established throughout literature. Table 3-3 summaries the key reviews done on the TPB and their main findings.

The Predictive Power of the TPB: Various Behaviours

Ajzen (1991) first conducted a research review on 16 studies that were reread and examined to confirm the effectiveness of TPB on different types of behaviour. According to this review, PBC and intention significantly predicted behaviour. Intention proved to be a stronger predictor of behaviour in most research. The attitudes towards the behaviours under study were significant except for one study. Finally, subjective norms derived mixed outcomes among the 16 prior studies. The author argued that for those behaviours where subjective norms were not predictive of intention; personal considerations were more important and dominated the influence of perceived social approval and stress.

Table 3-3: The Key Reviews Done on the TPB and the Main Findings

Authors	Main Findings
Ajzen (1991)	PBC and intention significantly predicted behaviour Intention was the strongest predictor of behaviour Attitudes predicted intentions Results for subjective norms were mixed
Godin and Kok (1996)	Reviewed health behaviours Inconsistent predictive power of the TPB across different health behaviour s
Armitage and Conner (2001)	Examined various social and health behaviours Across all behaviours, intentions and PBC predicted behaviour Antecedents of intention were significant
McEachan *et al*. (2011)	Tested health behaviours Included past behaviour, and moderators such as behaviour type and sample characteristics Intention and PBC predicted behaviour Intention is the strongest predictor of behaviour Past behaviour enhanced the prediction of behaviour, but affected the impact of intentions and PBC Attitude is the strongest predictor of intentions in almost all behaviours
Steinmetz *et al*. (2016)	Investigates the effective use of the TPB as a base for behaviour change interventions Findings show significant effects of the TPB based interventions across various behavioural domains, except a few Identified several factors as moderators for intervention effectiveness

In another study, Armitage and Conner (2001) examined 161 articles that contained 185 different empirical tests of the TPB, tackling various social and health behaviour. Results of the review showed that across all behaviour, the intention and PBC combined account for a 27% variance in behaviour. Moreover, the attitudes, subjective norms, and PBC were found to account for 39% of variance in intention.

Steinmetz *et al.* (2016) correspondingly conducted a more recent meta-analysis. They discussed the effective use of the TPB as a base for behaviour change interventions. In this meta-analysis, 123 interventions in numerous disciplines (such as alcohol reduction, hygiene, traffic behaviour and nutrition etc.) were identified from 82 papers. The aim of this meta-analysis was three-fold: (1) evaluating a wide variety behavioural intervention to better understand the generalisability and usefulness of the TPB based interventions, (2) assessing the effectiveness of various behaviour change methods used in different interventions under study, and (3) investigating the effect of different moderators of intervention effectiveness, such as mode of delivery, study design, and demographics, such as education, age and gender etc.

Findings of Steinmetz *et al.*'s (2016) analysis showed that the interventions had a mean effect size of 0.50 for changes in behaviour. Mean size effects of the antecedent variables ranged from 0.14 for subjective norms to 0.68 for control beliefs (the antecedent variables were behavioural, normative, and control beliefs, attitude, subjective norm, perceived behavioural control, and intention). Furthermore, the findings of the review revealed that the effectiveness of the interventions used varied among behaviour change methods. Public interventions were more successful in changing behaviour than private ones. The results also identified that gender, education, and behavioural domains are moderators of intervention effectiveness.

It is important to note that this meta-analysis was intended to investigate the plea made by Sniehotta *et al.* (2014) to retire the TPB as it has been condemned as a base for designing effective behaviour change interventions. Thus, Steinmetz *et al.* (2016) proved that their conclusions made from the 82 reviewed papers indicated that it is safe to *'lay these concerns to rest'*. The TPB is suitable for continuous research. Their analysis showed significant effects of the TPB based interventions across various behavioural domains, except a few.

The Predictive Power of the TPB: Health Behaviours

Godin and Kok (1996) conducted a similar research review as Ajzen (1991). Their meta-analysis reviewed prior studies of 56 health related behaviours. The results found in these studies were inconsistent as regards the predictive power of the TPB across different health related behaviours. It is important to note that this meta-analysis included only health specific behaviours and stated findings that were derived from studies that reported the relevant data (Armitage and Conner, 2001), which may have exaggerated the stated values (Rosenthal, 1979).

A different review by Hausenblas, Carron and Mack (1997) examined the used of the TRA and TPB to exercise behaviour, and based only on the correlations between the perceived behaviour control, intention and behaviour, concluded that the TPB is more useful than the TRA.

McEachan *et al.* (2011) implemented a meta-analysis, but with a different approach. Basically, 237 empirical tests were investigated from 206 articles, which focus on the efficacy of the TPB, while controlling for the impact of past behaviour, as well as assessing several moderators such as behaviour type and sample characteristics (age group); along with methodological factors such as length of follow-up and nature of behavioural assessment (objective vs. self-report measures). The tests tackled numerous health behaviours including dietary behaviour, physical activity, safer sex, and abstinence, such as smoking or drinking.

McEachan *et al.*'s (2011) review showed that intentions and PBC was responsible for 19.3% change in behaviour, with intention being the strongest and highest predictor of behaviour when compared to PBC. Adding past behaviour as a predictor of behaviour resulted in a further 10.9% change in behaviour, although diminishing the effects of intention and PBC. Furthermore, the antecedents of intention (attitude, subjective norms and PBC) accounted for 44.3% of variance in intention; with attitude being the strongest predictor, followed by PBC and subjective norms. Results of the effectiveness of TPB regarding various types of behaviour show that the TPB predicted some behaviour (physical activity and dietary behaviour at 23.9% and 21.2% change in behaviour, respectively) than other behaviour (such as risk, detection, safer sex and abstinence behaviour, with 13.8-15.3% change in behaviour). Intention also happens to be the strongest predictor of all behaviour types.

Furthermore, attitudes are the highest predictor of intention for all behaviour except for detection behaviour where PBC contributes the best, and risk behaviour where intentions and PBC have comparable impacts. According to McEachan *et al.*'s (2011) analysis, subjective norms are the highest predictors of intention for safer sex, risk, and dietary behaviour. When discussing the moderating role "sample age" (different age groups, such as adult, student, and adolescent), results showed that this comparison could only be done regarding physical activity behaviour. The results indicated that physical activity behaviour and intentions are better predicted among students than other groups. However, the study noted the subjective norms played a major role in predicting intentions of adolescents in all behaviour, except when it comes to physical activity behaviour. Methodological characteristics were also found to play a role in the effectiveness of the TPB. The results indicated that short-term follow-ups better predict behaviour. Thus, the lengths of follow-ups act as the moderation. Self-report behaviour assessments were also better predictors of behaviour than objective behaviour measure.

To conclude, a number of analyses and reviews done on the effectiveness of the TPB and its usefulness in altering social and health behaviour show that the model predicts intentions and behaviour. The model's variables accounted for 40-49% of variance in intention. In addition, the model's variables accounted for 26-36% of the variance in behaviour (Ajzen, 1991; Armitage and Conner, 2001; Godin and Kok, 1996; Hagger, Chatzisarantis and Biddle, 2002; McEachan *et al.*, 2011; Schulze and Whittman, 2003; Trafimow, Sheeran, Conner and Finlay, 2002). Prior research supported the TPB over the years in various behavioural fields, including smoking. It has led this research to believe that the TPB can effectively aid in predicting WTS behaviour. As such, this thesis chose to adopt the theory, including others, to construct the proposed conceptual model of the current study. Moreover, the nature of WTS behaviour has directed this research to consider other variables that are suggested to have an impact on water-pipe smoker's attitudes and intentions to smoke. The next section discusses these influences.

3.5 Influences on Water-pipe Tobacco Smoking Behaviour

Previous research has identified that there several factors influencing WTS behaviour. This section presents a summary of the results of the main studies and the influences they explored. Throughout Sections 2.2.2 and 2.2.3 in Chapter 2, behaviour that was associated with WTS was

influenced by various elements, including those that were the considered personal or socio-cultural in nature. As such, the influences of WTS reviewed in this section are: personal values, socialisation agents, religiosity, attitude, PBC, subjective norms, fear of negative evaluation and gender. The following subsections discuss each one in detail.

3.5.1 Personal Values

People's values and value priorities play a vital role in understanding and predicting their attitudes and behaviour. According to theorists across various disciplines (psychology, sociology, marketing, and behavioural economics), personal values have been highlighted as a significant predictor towards decision-making processes (Rohan, 2000). In reality, prior studies in WTS have discussed numerous reasons why individuals, both men and women, engage in WTS. These reasons were sometimes personal, such as viewing WTS as exciting or part of their traditions; or viewing WTS as less dangerous compared to cigarette smoking. Other times, these reasons were socially bound. It was found that the smokers develop progression towards water-pipe usage if their family and friends happen to approve and/or engage in WTS, or that it is part of their leisure activity at any hookah bar or café (Akl *et al.,* 2015). These motives stem from each individual's own personal values, and how they prioritise these values according to their own value system.

For decades, research and analyses in various fields of social sciences have had issues defining the term 'value'. There was inconsistency among its conceptualisation and measurement (Hitlin and Piliavin, 2004; Rohan, 2000). According to Rohan (2000), the values theory and its earlier research suffered because the term value was overused and distorted, within and out of context. It was found that the concept was misrepresented because people changed the implication depending on the situation, making it signify what they chose it to mean at that point. Hence, it is important to understand the term 'value', and distinguish it from other terms that have been used interchangeably with it, such as traits, attitudes, norms and needs. The concept of 'value' is clearly defined by Roccas and Sagiv (2010). They explained that values that are important and highly prioritised to an individual are important across many situations. This specific feature about values differentiates it from norms, traits, and attitudes that are usually linked to some specific object, situation, or action.

By definition, attitudes are favourable or unfavourable evaluations of an object (Eagly and Chaiken, 1993). Attitude is applied to more specific entities or social objects (such as WTS) (Hitlin and Piliavin, 2004). However, values are relatively more abstract than attitudes (Rokeach 1973; Williams, 1979). The concept focuses more on ideals. It would be clearer to distinguish between both concepts by clarifying that attitudes are judgments that are linked to specific objects. Values, on the other hand, are comparatively broader, and more focused on matters of individuality (Erickson, 1995; Hitlin, 2003). For example, finding cigarette smoking to be dangerous is a specific attitude towards cigarette smoking, but health (or personal health) is a value you hold important in your value system.

A trait is often defined as a distinguished characteristic in an individual. It can refer to a main feature in a person's personality. Roccas and Brewer (2002) discussed the confusion between trait-based behaviour and value-based behaviour by arguing that value-based behaviour reflects more cognitive control over one's actions. They summarised the differences between both constructs, suggesting that traits are enduring disposition, while values are enduring goals.

The interchangeable use between the concepts of values and norms, as if they both mean the same thing, is commonly found. Even though norms and values are both viewed as group-level phenomena requiring shared agreement (Hitlin and Piliavin, 2004), they differ in a lot of other ways. According to Hitlin and Piliavin (2004), norms are situation based, while values are trans-situational, and are assessed as an individual-level construct. Both concepts' effects on behaviour are different. Human needs stem from biological influences. Values serve as socially acceptable, agreed upon, and cultural refined ways to expressing needs (Hitlin and Piliavin, 2004).

Because of the vast confusion and debate over the conceptualisation of values, research and studies from various fields have defined values in different ways, with some similarities. Table 3-2 illustrates some of the definitions of values over time. Schwartz and Bilsky (1987, p. 551) reviewed most of these definitions and reported five common features: *"According to the literature, values are (1) concepts or beliefs, (2) about desirable end states or behaviour, (3) that transcend specific situations, (4) guide selection or evaluation of behaviour and events, and (5) are ordered by relative importance".* These common features in the definitions of value suggest that an individual's set of values is constructed and organised in some sort of schemata, or what

is known as a *value system*. Therefore, a person's set of values is structured and organised according to priority.

The term value has developed over time, and has been described differently by theorists. However, it is important to understand and grasp this evolution of the conception of values. Definitions of values are presented in Table 3-4. According to Michener, DeLamater and Myers, (2004) point of view, values are *"well-organized structure(s) of cognition about some social entity such as a person, group, role or event"* (Michener et al., 2004, p. 107). According to Rohan (2000), the features discussed by Schwartz and Bilsky (1987, 1990) are verified as significant and existing, declaring that *"the value system is a stable, meaning-producing superordinate cognitive structure"*.

Table 3-4: Definition of Values

Theorists	Definitions of Values
Lewin (1952, p.41)	"Values influencing behaviour do not have the character of a goal (i.e., of a force field). For example, the individual does not try to "reach" the value of fairness, but fairness is "guiding" his behaviour. It is probably correct to say that values determine which types of activity have a positive and which have a negative valence for an individual in a given situation. In other words, values are not force fields but they "induce" force fields. That means values are constructs that have the same psychological dimension as power fields."
Kluckhohn (1951, p. 395)	"A value is a conception, explicit or implicit, distinctive of an individual or characteristic of a group, of the desirable that influences the selection from available modes, means, and ends of actions."
Heider (1958, p. 223)	"We shall use the term value as meaning the property of an entity (x has values) or as meaning a class of entities (x is a value) with the connotation of being objectively positive in some way."
Rokeach (1973, p. 5)	"A value is an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence."
Feather (1996, p. 222)	"I regard values as beliefs about desirable or undesirable ways of behaving or about the desirability or otherwise of general goals."
Schwartz (1994, p. 21)	"Define values as desirable trans-situational goals, varying in importance, that serve as guiding principles in the life of a person or other social entity."
Schwartz (1999, p. 24)	"I define values as conceptions of the desirable that guide the way social actors (e.g., organisational leaders, policy-makers, individual persons) select actions, evaluate people and events, and explain their actions and evaluations."

Source: Rohan (2000)

3.4.1.1 Value Theories

Value theories date long back to the 1890s. Shand (1896, 1914) suggested a theory of character is necessary because different formations in the organisation of sentiments (which back then were a similar concept to values) resulted in different responses in people's behaviour. Similarly, Spranger (1928) discussed six attitudes (or value types) that are found in all people. These six value types are existent in different proportions with one attitude dominating. In line with Spranger's (1928) work, Allport, Vernon and Lindzey (1960) introduced the first version of the study of values instrument. Allport *et al.*'s (1960) work was considered one of the most popular measures of human value priorities for many years (Rohan, 2000); and other scholars conducted further studies that followed the same school of thought (Morris, 1956).

In 1973, the Rokeach Value Survey was introduced. Milton Rokeach introduced a different approach for measuring values, using two types of value words: terminal values (goals) and instrumental values (modes of conduct). The approach was simple: a list of values was provided, with a brief explanation of the meaning of each value. People were asked to rank these value words according to their perception of their importance. Rokeach (1973, p. 30) stated that: "*these set of values were created on basis of intuition and were meant to be a reasonably inclusive sample of human values".* Even though the Rokeach value survey was one of the most popular methods of measuring value priorities, the lack of theory about the core value system structure transformed the survey into a list of unrelated value words (Rohan, 2000).

Rokeach's (1973) work has inspired other work and research, such as the work of Shalom Schwartz. However, some differences lie between Rokeach's and Schwartz's work. Firstly, Rokeach differentiates between instrumental values (means) and terminal values (ends). Schwartz found no empirical confirmation for such distinctions and argues that the same values can reflect motivations for both means and ends. Secondly, the way the research measured the concept of value varied in the studies. Rokeach's measurements asked respondents to rank values, while Schwartz measurements ask respondents to rate the values listed. Schwartz (1994) justified his choice for using rating over ranking as a non-forced choice approach for value measurement. He argued that rating has more statistical use. It also aids studies in using longer lists of values and can spot negative values (Hitlin and Piliavin (2004). Nevertheless, both Rokeach's and Schwartz's works have theorised values similarly.

Following the notion that values are embedded within a person and are the origin for a person's goals (Joas, 1996), Schwartz and Bilsky (1987, 1990) introduced a new theory of values. Their theory discussed a value system structure. Schwartz and Bilsky (1987, 1990) identified a set of universally shared values. The focus of the value system structure was on the motivational goals expressed by each value type. Even though these set of values are shared universally, the theory posited that people would differ in the importance of these values according to their own personal goals. Schwartz (1992) reviewed Schwartz and Bilsky's (1987, 1990) theory. He posited that values are cognitive representations of three universal human requirements: (a) biologically based organism needs, (b) social interactional requirements for interpersonal coordination, and (c) social institutional demands for group welfare and survival. He also suggested that the value system structure was divided into two motivational dimensions: (1) openness to change versus conservation, and (2) self-enhancement verses self-transcendence (see Figure 3-9).

The openness to change-conservation dimension represents the struggle between being motivated to: "*follow one's interests, both intellectually and emotionally, in unpredictable and uncertain directions*" and "*preserving the status quo and the certainty it provides in relationships with close others, institutions and traditions*" (Schwartz, 1992, p.43). For example, a water-pipe smoker would struggle between wanting to smoke a water-pipe because it is something new to try (openness to change), and not smoking a water-pipe because it is socially unacceptable (conservation). The second motivational dimension, self-enhancement-self-transcendence, express the conflict between: "*valuing one's own interests over other*s and *rising above one's own interests for the sake of others"* (Schwartz, 1992, p.43). Following the previous example, a water-pipe smoker would have to choose between following the urge to smoke a water-pipe because it fuels their sense of achievement and liberation, and not to smoke a water-pipe as it harms the environment.

These two higher-order dimensions of values, openness to change/conservation and self-enhancement/self-transcendence, hold 10 motivationally distinct types of values: (1) self-direction, (2) stimulation, (3) hedonism, (4) achievement, (5) power, (6) security, (7) conformity, (8) tradition, (9) benevolence and (10) universalism (see Table 3-3 for definitions and representative values). Hedonism shares components from both 'openness to change' and 'self-

enhancement'. Hence, it is placed within the motivational continuum, represented in the circle. The organisation of these ten values within the circle is based on two determinants: compatible and conflicting values, and focus on outcomes. For example, it reflects whether the values are personal or social outcomes (Schwartz, 1992, 1994).

Roccas and Sagiv (2010) explained that, according to Schwartz's (1992, 1994) theory of basic values, the more essential a value is to a person, the more this person is motivated to achieve the goal it signifies. However, given the contrast between some values and others, it is impossible to achieve all the values at once. Adjacent values within the circle have similar or compatible motivational goals, while opposing values would be conflicting. For instance, if a person prioritises or values their own personal success and sense of individual accomplishment, then working for the welfare of others is less important. Hence, achievement is found opposite to benevolence. According to the same given example, research finds that the achievement value focuses on personal outcomes, while the benevolence value focuses on social outcomes. Later, other studies theorised bases for the order of the values within the continuum (Schwartz 1996, 2009). For example, these studies focused on whether the attainment of the value is done to avoid anxiety or is it anxiety free; and whether it reflects self-protection or promotes self-expansion and growth (see Figure 3-14).

Table 3-5: Value Type, Definitions and Representative Values of Schwartz

Value Type and Definition	Representative Values
Power: Social Status and Prestige, Control or Dominance Over People and Resources.	Social power: Control over others, dominance. Authority: The right to lead or command. Wealth: Material possessions, money.
Achievement: Personal Success Through Demonstrating Competence According to Social Standards.	Success: Achieving goals. Capability: Competence, effectiveness, efficiency. Ambition: Hard work, aspirations. Influence: Have an impact on people and events.
Hedonism: Pleasure and Sensuous Gratification for Oneself.	Pleasure: Gratification of desires. Enjoyment in life: Enjoyment of food, sex, leisure, and so on.
Stimulation: Excitement, Novelty, and Challenge in Life.	Daringness: Adventure-seeking, risk taking. A varied life: Filled with challenge, novelty, and change. An exciting life: Stimulating experiences.
Self-Direction: Independent	Creativity: Uniqueness, imagination.

Value Type and Definition	Representative Values
Thought and Action-Choosing, Creating, Exploring.	Freedom: Freedom of action and thought. Independence: Self-reliance, self-sufficiency. Curiosity: Interest in everything, exploration. Choose own goals: Select own purposes.
Universalism: Understanding, Appreciation, Tolerance, and Protection for the Welfare of all People and for Nature.	Broadminded: Tolerant of different ideas and beliefs. Wisdom: A mature understanding of life. Social justice: Correcting injustice, care for the weak. Equality: Equal opportunity for all. A world at peace: Free of war and conflict. A world of beauty: Beauty of nature and the arts. Unity with nature: Fitting into nature. Protecting the environment: Preserving nature.
Benevolence: Preservation and Enhancement of the Welfare of People with Whom One is in Frequent Personal Contact.	Helpful: Working for the welfare of others. Honesty: Genuineness, sincerity. Forgivingness: Willingness to pardon others. Loyalty: Faithful to my friends, group. Responsibility: Dependable, reliable.
Tradition: Respect, Commitment, and Acceptance of the Customs and Ideas That Traditional Culture or Religion Provide the Self.	Humility: Modesty, self-effacement. Acceptance of my portion in life: Submission to life's circumstances. Devotion: Hold to religious faith and belief. Respect for tradition: Preservation of time-honoured customs. Moderate: Avoiding extremes of feeling or action.
Conformity: Restraint of Actions, Inclinations, and Impulses Likely to Upset or Harm Others and Violate Social Expectations or Norms.	Politeness: Courtesy, good manners. Obedience: Dutiful, meet obligations. Self-discipline: Self-restraint, resistance to temptation. Honor parents and elders: Showing respect.
Security: Safety, Harmony, and Stability of Society, of Relationships, and of Self.	Family security: Safety for loved ones. National security: Protection of my nation from enemies. Social order: Stability of society. Cleanliness: Neatness, tidiness. Reciprocation of favors: Avoidance of indebtedness.

Source: Schwartz *et al*. (2012), Rohan (2000)

Schwartz's (1992) theory of basic values has inspired hundreds of studies worldwide in various areas of research, including environmental studies (De Groot and Steg, 2008; Urien and Kilbourne, 2011), alcohol consumption (Nordfjærn and Brunborg, 2015), tourism decisions (Ye,

Zhang and Yuan, 2017), and pro-social behaviour (Joireman and Duell, 2007). However, Schwartz *et al*. (2012) sought to improve this theory. They decided to partition the continuum into more specific sets of conceptually distinctive values. These sets of conceptually distinctive values are argued to be more predictive of human behaviour (Schwartz *et al.,* 2012).

The new set of conceptually narrowed values contains 19 values. These values were originated from the original 10 values. Their place in the circular motivational continuum was rationalised in the same manner as with the 10 basic values (see Figure 3-9). These 19 values are: Self-direction – thought, Self-direction – action, Stimulation, Hedonism, Achievement, Power – dominance, Power – resources, Face, Security – interpersonal, Security – societal, Tradition, Conformity – rules, Conformity – interpersonal, Humility, Benevolence – dependability, Benevolence – caring, Universalism – concern, Universalism –nature, Universalism –tolerance.

In the original theory of basic values, the values within the continuum are described as continuous rather than discrete (Schwartz 1992, pp. 45-46); but with this revised and more narrowly defined set of values, Schwartz *et al.* (2012, p. 665) posit that:

"The refined theory gives researchers the option of working with as large or as small a set of values as is appropriate to their purpose. They may choose to work with all 19 values or to combine values and work with the original 10, the four higher order values, or even two subsets (e.g., growth vs. protection values). If only one part of the value circle interests a researcher, he or she may gain from the greater conceptual detail and clarity that the refined theory provides by discriminating more fine-tuned values in that part of the circle." Schwartz et al. (2012, p. 665)

The new refined theory gives researchers the chance to work with any kind of values that they feel are suitable for the context, and will aid the explorations and analyses, unlike the older set of values. For example, this study examines WTS behaviour. This study focuses on two contradicting subsets of values. The selected values were argued to affect water-pipe smokers' behaviour according to prior studies. A new instrument for measuring the new refined theory of basic values was also proposed and tested by multidimensional scaling (MDS) and confirmatory factor analyses (CFAs); both of which supported the uniqueness of the values suggested and their hypothesised order in data from 15 samples in 10 countries (Schwartz *et al.,* 2012). Other studies

were also carried out to validate the refined theory of basic values in other countries (see Schwartz and Butenko, 2014). Table 3-6 briefly explains the 19 values within the refined theory of basic values.

Table 3-6: The 19 Values of the Refined Theory, Defined in Terms of Its Motivational Goal

Value	Conceptual definitions in terms of motivational goals
Self-direction – thought	Freedom to cultivate one's own ideas and abilities
Self-direction – actionn	Freedom to determine one's own actions
Stimulation	Excitement, novelty, and change
Hedonism	Pleasure and sensuous gratification
Achievement	Success according to social standards
Power – dominance	Power through exercising control over people
Power – resources	Power through control of material and social resources
Face	Security and power through maintaining one's public image and avoiding humiliation
Security – personal	Safety in one's immediate environment
Security – societal	Safety and stability in the wider society
Tradition	Maintaining and preserving cultural, family, or religious traditions
Conformity – rules	Compliance with rules, laws, and formal obligations
Conformity – interpersonal	Avoidance of upsetting or harming other people
Humility	Recognising one's insignificance in the larger scheme of things
Benevolence – dependability	Being a reliable and trustworthy member of the ingroup
Benevolence – caring	Devotion to the welfare of ingroup members
Universalism – concern	Commitment to equality, justice, and protection for all people
Universalism – nature	Preservation of the natural environment
Universalism – tolerance	Acceptance and understanding of those who are different from oneself

Source: Schwartz *et al*. (2012)

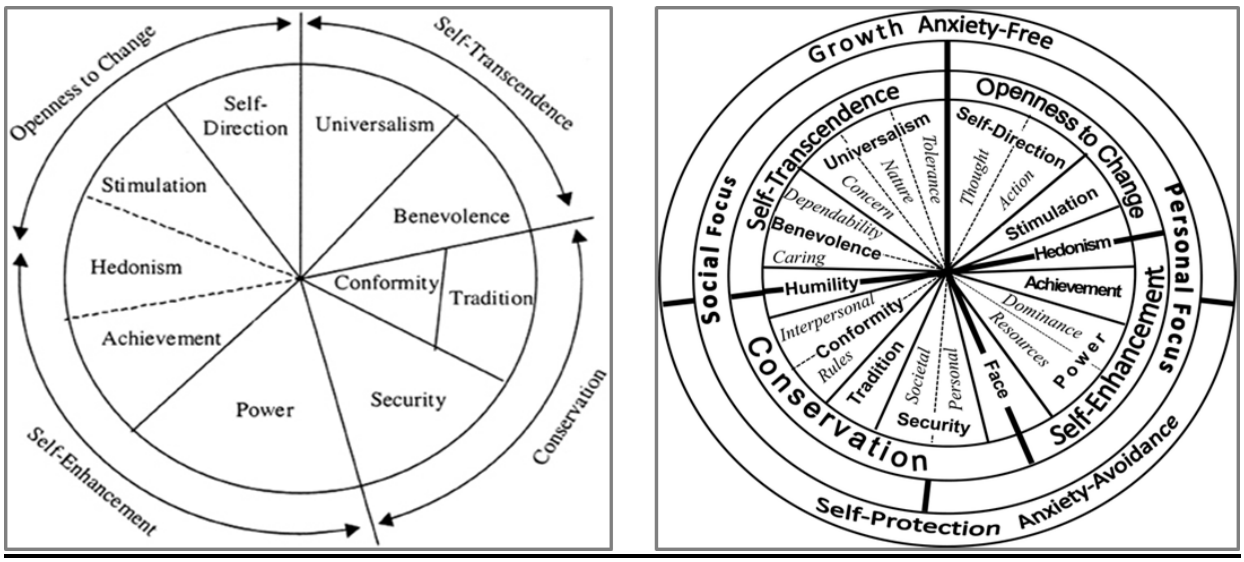

Figure 3-14: Circular Continuum of the 10 Values vs. 19 Values
Sources: Schwartz (1992), Schwartz *et al*. (2012)

3.4.1.2 Values and Behaviour

Differentiating values from other similar concepts provides a clear understanding of what values are. Theories of values have explained how values reflect certain motivational goals that individuals strive to achieve. In fact, values are thought to express fundamental human needs (Rokeach 1973; Schwartz 1992) that subsequently motivate social behaviour (Hiltin and Piliavin, 2004). However, according to Wojciszke (1989), for values to influence behaviour, three preconditions must be present: the value must be (1) a deep-rooted entity in a person's cognitive system, (2) activated from long-term memory, and (3) accepted by a person as relevant regarding the current situation. That is, if values are held without strong cognitive support (Maio and Olson, 1998), other situational forces and strong counter-arguments can challenge that value.

Nevertheless, there is some empirical support that behavioural changes can occur through influencing individuals' values (Rokeach, Rokeach, and Grube, 1984; Rokeach, 1973). For example, prior research showed that influencing values through interventions resulted in significant changes in weight-loss (Schwartz and Inbar-Saban, 1988) and smoking behaviour (Conroy, 1979). Values have also been associated with other behaviour, such as risky sexual behaviour (Goodwin, Realo, Kwiatkowska, Kozlova, Luu and Nizharadze, 2002), leadership behaviour (Castillo, Adell and Alvarez, 2018), shopping via social media platforms

(Apiraksattayakul, Papagiannidis and Alamanos, 2017), Internet usage (Hartman, Shim, Barber and O'Brien, 2006), political behaviour, (Barnea and Schwartz, 1998), among others.

Past research considered individual differences in value priorities and orientations by predicting personal attitudes and behaviour from personal values (Poortinga, Steg and Vlek, 2004). Moreover, research in WTS reveals that one of the many reasons why individuals – especially in Middle Eastern countries – practise WTS is because it is related to social acceptance, cultural heritage, and the belief that WTS is not as harmful as cigarette smoking (Roohafza *et al.*, 2015). As such, individual values among WTS smokers need to be further researched. Prior research into personal values and smoking also found that different values guide smokers from non-smokers, proving that personal values can predict smoking attitudes (Chang, 2005).

Further research suggested that the influence of values on specific behaviour is mediated by attitudes toward the behaviour, naming this process the *"value-attitude-behaviour"* hierarchy (Homer and Kahle, 1988). Homer and Kahle's (1988) study argued that: *"the influence should theoretically flow from abstract values to midrange attitudes to specific behaviour"* (p.638). This hypothesised hierarchy was supported by their research that found consumer attitudes towards health food mediated the relationship between personal values and the purchase of health food. Chang (2005) declared that smoking is principle driven. It is intensely predicted by values.

Other theorists of values, such as Hofstede (1983), argued that values are related to basic societal issues. This is known as the cultural dimensions (power distance, uncertainty avoidance, individualism vs collectivism and masculinity vs femininity) (Hofstede and Bond, 1984). Although cultural dimensions can help explain WTS behaviour, they will only aid in describing how cultural values shape WTS behaviour. However, in order to fully understand WTS behaviour, this study finds it essential to first understand basic individual values and their various effects on individuals' attitudes and intentions towards WTS.

When reviewing WTS literature, prior research elucidates the prevalence of WTS worldwide (Akl *et al.,* 2010; Maziak, 2011), especially in the EMR as it is embedded in their old traditions and cultures. However, in order to tackle such an epidemic, it is essential that researchers understand which values guide water-pipe smokers' attitudes towards WTS, and how it shapes their intentions to smoke and ultimately their shisha smoking behaviour. Hence, this thesis

proposes that personal values can also be used to understand how individuals' attitudes and intentions are formed regarding WTS. Values act as criteria for judgment and preferences. Therefore, behaviour is considered an expression of an individual's basic values (Rokeach, 1973). It is argued that personal values can guide individuals into forming attitudes towards WTS, which will influence their intentions to smoke.

Throughout WTS literature, two opposing values subsets of the Schwartz *et al.* (2012) refined theory of basic values were most highlighted: openness to change versus conservation. As such, this study focuses on these two subsets as the values that may motivate WTS behaviour among the youth and young adults. Previous studies have claimed that one of the main reasons for WTS uptake is curiosity (Baheiraei, Sighaldeh, Ebadi, Kelishadi and Majdzadeh, 2015; Ghafouri *et al.,* 2011; Hammal, Mock, Ward, Eissenberg and Maziak, 2008). According to one study in Iran (Baheiraei *et al.,* 2015), women were especially curious with trying water-pipes as they were fascinated with water-pipe smokers who showed signs of pleasure as they exhaled smoke in various shapes and aromas. In fact, Baheiraei and colleagues (2015) claim that among Iranian women, WTS has become a common and preferred leisure activity. These studies indicated other reasons for WTS, which include: pleasure seeking, relaxing activity, the need for entertainment, and to fill up free time (Hammal *et al.,* 2008; Karimy *et al.,* 2013; Sidani *et al.,* 2014). These reasons among others, all express values within the openness-to-change dimension, such as stimulation and self-direction. These values express hedonism values that are at borders with openness to change values. Prior research in WTS had not thoroughly investigated personal values in regard to smoking water-pipes; therefore there is a gap in literature that this thesis seeks to address. It is argued that Schwartz's *et al.* (2012) refined basic values theory *Openness to Change* dimension affects attitudes towards WTS. For this reason, this study has hypothesised that:

H_1: Personal Values affect attitudes towards water-pipe tobacco smoking

H_{1a}: *Openness to Change affects attitudes towards water-pipe tobacco smoking*

Singh, Enzhong, Reidpath and Allotey (2017) also argue that water-pipe smokers claim that cultural acceptance of shisha smoking as a leisure activity is one of leading factors among youth to start shisha smoking. Cultural custom and tradition are also a main reason for WTS use among youth and young adults that reside inside and outside the EMR (Jamil *et al.,* 2009). EMR youth who reside in countries outside the EMR explain that when living abroad, WTS is a way to revive one's heritage and socialise with others of the same background (Chan and Murin, 2011; Hammal *et al.,* 2008). Conversely, in some countries, like Lebanon, women engage in WTS as a sign of liberation and sexiness. However, women in Egypt believe that WTS is frowned upon by society and its norms. Thus, they are discouraged in its use (Khalil *et al.,* 2013).

Moreover, youth and young adults find themselves conforming to their different social group expectations and behaviour, whether encouraging or discouraging WTS use (Noonan and Kulbok, 2012). Abu-Rmeileh and colleagues (2018) argued that in the EMR, it is culturally more acceptable for young people to smoke water-pipes than cigarettes. Kheirallah, Alzyoud and Ward (2015) explained that WTS is often initiated among the young in this region by sharing a water-pipe with their friends at the cafe. Accordingly, individuals would feel a need to confirm to their peers or family in order to gain some personal and societal stability within their lives. These expressions of motives reflect values (conformity, tradition, and security) found in the conservation dimension of Schwartz's *et al*., (2012) refined theory of basic values, which oppose the subset of openness to change. Hence, it is reasoned that the subset openness to change-conservation may predict attitudes towards WTS. In this study, it is hypothesised that:

H_{1b}: *Conservation affects attitudes towards water-pipe tobacco smoking*

It is important to note that values are not the only motivators of behaviour, but work with other drivers to influence behavioural change (Staub, 1989).

3.5.2 Consumer Socialisation and the Social Learning Theory

Social interaction is a source of knowledge for people. Socialisation is a process of learning to participate in social life (Mortimer and Simmons, 1978). For example, social contact (whether with the social groups or theinstitutions surrounding them) allows individuals to develop their personality and acquire their culture (Haralambos and Holborn, 2008). Socialisation is

commonly defined as the: *"processes by which young people acquire skills, knowledge, and attitudes relevant to their functioning as consumers in the marketplace"* (Ward, 1974, p. 1). This socialisation process takes place through what is known as *socialisation agents*, such as: peers, parents, mass media, schools, religions and other institutes. Family and peer groups are considered to be primary agents for socialisation. Schools, religious institutions, and mass media are considered as secondary means of socialisation (Arnett, 1995).

Research on socialisation and the impact of these groups on consumer behaviour has been taking place for more than 40 years. In WTS literature, the impact of socialisation, specifically among peers and family is evident (Afifi *et al.*, 2013; Jawad, Nakkash *et al.*, 2015; Maziak, Eissenberg, Rastam *et al.*, 2004). The Social Learning Theory (SLT) that has been developed by Akers (1977) explained that young people acquire knowledge about deviant behaviour (such as WTS) through information that they have acquired from their peers and family (primary group), as well as the mass media (secondary group). According to the theory, the main mechanisms for conforming or practicing the deviant behaviour are: differential association (interaction with others, whether directly or indirectly), differential reinforcement (instrumental learning through reward and punishment), imitation (observational learning), and cognitive definitions (development of attitude).

Primary and secondary socialisation agents have been proven to be influential on individuals which signifies the principal behavioural effects (Akers and Lee, 1996). It was assumed by Akers and Lee (1996) that teens will be more likely to start smoking if they associate themselves with people who are smokers; who hold favorable attitudes towards smoking; can imitate behavioural models of smoking; and have established more positive than negative outcomes of smoking in terms of other people's reactions (Akers and Lee, 1996; Thakor and Goneau-Lessard, 2009).

Akers, Krohn, Lanza-Kaduce and Radosevich (1979) discussed the social learning process, stating that: "*differential association, which refers to interaction and identity with different groups, occurs first. These groups provide the social environments in which exposure to definitions, imitation of models, and social reinforcement for use of or abstinence from any particular substance takes place*" (p. 638). Hence, it is crucial to understand the effect of these groups on WTS behaviour.

Past studies have highlighted the effect of both family and friends on an individual's smoking behaviour (Kamaruddin and Mokhlis, 2003; Mangleburg and Bristol, 1998; Thakor and Goneau-Lessard, 2009; Ward, 1974). According to research in WTS behaviour, it is not unusual in the EMR for parents to offer houseguests a shisha or even share it with their sons and daughters, unlike their behaviour towards cigarettes (Chaouachi, 2000; Kandela, 2000; Maziak, Eissenberg *et al.,* 2004). Moreover, in other studies, peer influence is evident in encouraging WTS. According to peer influence, WTS is associated with positive attributes bringing people together (Afifi *et al.,* 2013; Heinz *et al.,* 2013). Hence, this research mainly focuses on the primary groups of social learning that have been shown in other investigations (peers and family). These primary groups are to be discussed in the next section.

3.4.2.1 Peer Influence

The relationship between peer influence and smoking has been recognised in literature for over 25 years (Hoffman, Sussman, Unger and Valente, 2006). Previous research has concluded that young individuals are more likely to accept information from peers than from their parents and mass media. Youth and young adults usually see their friends as role models (Akers and Lee, 1996; Moore *et al.,* 2002). Prior studies concluded that susceptibility to peer influence is worth considering. Susceptibility to peer influence is defined as: "*the need to identify or enhance one's image with significant others through the acquisition and use of products and brands, the willingness to conform to the expectations of others regarding purchase decisions; and/or the tendency to learn about products and brands by observing others and/or seeking information from others*" (Bearden, Netemeyer and Teel, 1989, p.474).

Moore *et al.* (2002) found that peer influence was a countervailing force to antismoking ads. Further, Eisenberg and Forster (2003) realised that peer smoking behaviour is related to smoking behaviour among adolescents. In Greece, a study by Strong and Eftychia (2006) stressed that teenagers' smoking behaviour is strongly influenced by both family and peers. According to their findings, more than half of the respondents stated that all or most of their friends were smokers. The other respondents stated that some of their friends smoked. Only two of the 100 respondents interviewed had no friends who smoked.

Studies of WTS have stressed that the influence of peers is an important factor that facilitates engagement in smoking (Roohafza *et al.,* 2015). In a study by Afifi and colleagues (2013), group

identity and peer pressure were highlighted as triggers to smoking. They referred to WTS as a social habit or common practice. They also indicated that the respondents described WTS as prestigious among higher social classes, while other respondents thought it was fashionable. This notion was also expressed in another study that took place in Syria. Maziak, Eissenberg, Rastam *et al.* (2004) investigated a group of students who expressed that they saw WTS as trendy and as sociably pleasurable activities.

In Egypt, a study by Labib and colleagues (2007) stated that peer pressure and curiosity were the most common motivators behind the initiation of WTS, especially among the Egyptian females. A study by Schröder, Chaaya, Saab and Mahfoud (2015) also signified the impact of peer influence on intentions to water-pipe smoke in Lebanon. These research conclusions were also found to be common and generalised to other countries outside the Middle East. For example, Jawaid *et al.* (2008) argued that peer pressure was identified as one of the most common reasons for the escalating popularity of WTS in Pakistan.

Studies conducted in the western nations obtained similar conclusions to the studies that were examined in the Middle East. In London, Kotecha *et al.* (2016) conducted a study on WTS. They found that peer pressure and flavored tobacco played a key role in WTS. Another study in the USA took place in a large Midwestern University. The findings revealed that close friends of the college students introduced WTS to them, signifying strong peer influence (Braun *et al.*, 2012). A study in Northern Sweden found that the chances of having friends who smoked WTS regularly were eight times higher than non-users among young adults. Interestingly, when asked, 40% of non-water-pipe smokers would try water-pipe smoking if their friends invited them (Ramji *et al.*, 2015).

Hammal *et al.*'s (2008) research took place in Syria. Adult shisha and adult cigarette smokers were interviewed regarding their smoking habits. According to the results, shisha smokers found shisha smoking to be an enjoyable social experience that is linked to their cultural roots, compared to cigarette smokers who associated cigarette smoking as dull, oppressive, and addictive. In the study, shisha smokers stated that peer pressure was one of the factors of smoking initiation. The participants smoked because they did not want to feel that they were different from their friends. Even cigarette smokers admitted that although they experienced

negative outcomes of initial smoking, they still went on with it to avoid being embarrassed by their friends.

Based on the prior studies, WTS are encouraged by peers. The motivations for smoking water-pipe are enthusiastic justifications, not like motives for smoking cigarettes. Cigarette smoking is commonly associated as a result of a stressful lifestyle (Siqueira, Diab, Bodian and Rolnitzky, 2000). However, WTS is popular among youth and young adults because it acts as a form of entertainment, relaxation, social acceptance, and coolness. This makes WTS more interesting and attractive for the youth and young adults to engage in with friends. Consequently, according to the literature reviewed, this study recognises the influential effects of socialisation, especially among friends and peers, and thus hypothesised that:

H_2: Socialisation Agents affect attitudes towards water-pipe tobacco smoking

H_{2a}: *Peer Influence affects attitudes towards water-pipe tobacco smoking*

3.4.2.2 Parental Influence

Parental influence plays a major role in the upbringing of their offspring. The way in which parents communicate with children is part of their parenting style. Therefore, parental influence depends on the degree to which they are available to communicate with their children regarding various issues. A parent's role in the socialisation process affects young adults' attitudes towards WTS. Research showed that parental influence aligns children's values with those of the surrounding cultures (Moore *et al.,* 2002). However, according to Kandel (1996), when it comes to deviant behaviour, family influences are less important than peer influences, indicating the unawareness of the vital role family relationships play in influencing adolescents' values, norms, and behaviour. Further studies, like Eisenberg and Forster (2003), found that family members' influence is related to smoking behaviour among adolescents.

The family environment is said to have two orthogonal dimensions: socio-oriented and concept-oriented communication (Carlson, Grossbart and Walsh, 1990; Carlson, Walsh, Laczniak and Grossbart, 1994). Parents who followed a socio-oriented communication style stress conformity, and usually monitor and regulate their child's behaviour. They do not give the child a chance to

learn from their experiences. This is also known as a restrictive orientation (Carlson, Laczniak and Wertley, 2011). In contrast, concept-oriented parents tolerate a degree of autonomy among their children, encouraging them to improve their skills as individuals. It has been argued that parents who follow a concept-oriented communication style usually listen to their sons/daughter's thoughts and counterarguments about various issues that they discuss (Thakor *et al.,* 2009). On the contrary, parents who follow a socio-oriented communication style believe in control and monitoring. These parents would refuse to hear counterarguments from their children. Thus, their children do not freely discuss issues that they think about – in this study the discussed issue would be to reinforce negative/positive attitudes about WTS. This kind of socialisation is also referred to as warm orientation (Carlson *et al.,* 2011).

The role of the family in influencing smoking behaviour has been signified and tested for decades (Conrad, Flay and Hill, 1992; Petraitis, Flay and Miller, 1995). According to Engels and Willemsen (2004), there is substantial empirical evidence that parents affect adolescent smoking behaviour through their own smoking behaviour and through their parenting practices. Antismoking socialisation practices are also argued to discourage or prevent the youth from smoking initiation (Chassin, Presson, Todd, Rose and Sherman, 1998). Antismoking socialisation practices include methods, like discussing smoking-related topics, and the negative consequences of smoking (Engels and Willemsen, 2004; Fearnow *et al.,* 1998).

In the Netherlands, Harakeh *et al.* (2004) investigated parental factors and smoking behaviour using the TPB. They found that among other parental factors, the quality of the parent–child relationship affected adolescents' smoking onset indirectly through attitude and self-efficacy. Another study by Harake*h,* Scholte, De Vries and Engels, (2005) found that some antismoking socialisation practices by parents were associated with a reduced risk of the adolescent's engagement in smoking. When it comes to the quality the parent-adolescent communication, Harakeh and colleagues found that the better the quality of the communication, the less likely are adolescents to smoke. In their study, they stressed that talking frequently with the adolescent about smoking is important, but the manner of discussion is more vital. The approach of speaking in the discussion is influential. When discussing topics in a comforting and respectful manner, it will impact the adolescent. Huver, Engels, Vermulst, and de Vries (2007) further supported this finding.

A number of studies clarified the existence of the major roles and influences of parents and family on young individuals to engage in WTS (Afifi *et al.*, 2013; Jawad *et al.*, 2015; Maziak, Eissenberg, Rastam et al., 2004; Maziak, Ward, Eissenberg *et al.*, 2004; Maziak, 2002). Some of these studies focused on the family's attitude towards younger members smoking; and some explored the effect that parents have on their children if they themselves are engaged in WTS.

Jawad and colleagues' (2015) research suggested that aside from parental tobacco use, psychological factors in the parent-child relationship (such as quality of relationship or parenting style) might be important in determining WTS use. Research argued that in many Middle Eastern countries, it is considered inappropriate for youth to smoke cigarettes in the company of elders, whereas WTS is acceptable (Biswas and Sarkar, 2010; Kandela, 2000). A study by Ahmed *et al.* (2011), which took place in San Francisco, reported that the majority of parents who knew that their children were engaged in WTS disapproved of it, and discouraged its use.

In a study conducted in Syria, Hammal *et al.* (2008) discovered that young adults were concerned about their family's disapproval and rejection regarding cigarette smoking. According to the participants, cigartee smoking was considered unacceptable and goes against family perceptions and values. However, when interviewing young shisha smokers, six out of eight claimed that their parents did not mind them smoking. The other two interviewees admitted that their parents did not know about their shisha smoking habits, as their knowledge would upset them. These findings signify the important role that parents have on WTS, and how their communication about WTS can either facilitate or restrict WTS among their youth. As noted in a WTS academic review by Akl *et al*. (2015), family influences are one of the most important contributors to WTS among youth; for both initiation and continued use. Similarly, according to Singh *et al.*'s (2017) review, evidence in WTS research finds that interpersonal factors are considered one of the main initiating factors of WTS among youth, and suggest that interventions are to be tailored to include these factors.

Further studies into deviant behaviour, such as drug use and smoking, have stressed the role of social primary groups. Family and peers are important groups that influence individual attitudes and behaviour (Akers and Lee, 1999). In the SLT a person will carry out criminal/deviant behaviour when they:

"differentially associate with other people who commit criminal behaviour ***(Differential Association)*** *... and define it as desirable or justified in a situation discriminative for the behaviour* ***(Definitions)***" (Akers and Lee, 1999, p. 50).

As such, research showed that family and peers have a significant effect on one's own attitudes and behaviour, and are the main cause of differential reinforcement and role models to be followed (Cochran, Maskaly, Jones and Sellers, 2017). Primary social groups such as friends and family are also argued to have a direct effect on behaviour (Akers and Lee, 1999). Arguably, consumer socialisation research also suggests that young individuals are more likely to accept information from their primary group (such as parents) than mass media (Akers and Lee, 1999; Moore *et al.*, 2002). Moreover, studies in WTS have stressed the influence of parents as an important factor that facilitates the engagement in smoking (Roohafza *et al.*, 2015). Hence, it seems important to study the effect of these socialisation agents on WTS. Hence, this study hypothesised that:

H_{2b}: *Parental Influence affects attitudes towards water-pipe tobacco smoking*

3.5.3 Religiosity

Religiosity and the practice of religion constitute a vital part of the lives of many people around the world (Mathur, 2012). It is not only viewed as the core of a culture's belief system, but religiosity is also known to influence people's behaviour in all aspects of life, especially regarding life satisfaction and well-being (Tiliouineand Belgoumidi, 2009; Mathur, 2012). Although studies on the concept of religiosity date back to the early twentieth century (Durkheim, 1912), studies have still not settled on a unified agreement about the conceptualisation of religiosity. The variances in the characterisation of religiosity and the ambiguity in definition is due to the existence of different faiths and belief systems around the world. Each spiritual group defines religiosity from their point of view, both conceptually and operationally (one-dimensional vs. multi-dimensional) (Mathur, 2012). Moreover, when academics approach the concept of religiosity within research, each would address religiosity from different perspectives, making the concept harder to define (Cardwell, 1980).

Religion is commonly defined as an integrated system of beliefs and practices relative to sacred elements (Delener, 1990). Magill (1992) detailed that personal religiosity provides a background against which the ethical nature of behaviour is construed. Glock and Stark (1965) defined religiosity as a value-based approach that provides a person with a system of norms and values. They identified five dimensions of religiosity: experiential (religious feelings), intellectual (knowledge about religion), ideological (beliefs), ritual (religious behaviour), and result-oriented (influences of religion) (Fisherman, 2011).

Allport and Ross (1967) identified two dimensions of religiosity: intrinsic and extrinsic. According to prior research, the: "*extrinsically motivated person uses his religion whereas the intrinsically motivated lives his religion*'' (Allport and Ross, 1967: p. 434). Intrinsic religiosity is living one's religion with sincerity and intentionality and seems to be related to the private, emotional aspects of religiosity (Cohen *et al.,* 2005). On the other hand, the main idea of extrinsic religiosity is using religion for instrumental purposes or social achievement, such as using religion to gain status or for self-justification (Allport and Ross, 1967). Simply, extrinsic religiosity is what individuals show externally through religious behaviour, for example attending mosque or church. Intrinsic religiosity has been interpreted as being more normative than extrinsic religiosity (Cohen *et al.,* 2005; Hunt and King, 1971). According to Cohen *et al.* (2005), measures of intrinsic and extrinsic religiosity are commonly used in psychology.

Weaver and Agle (2002) stated that religiosity influences human attitudes and behaviour. Some research showed that religiously active people are reportedly healthier physically and live longer (Levin and Schiller, 1987; McIntosh and Spilka, 1990; Williams and Sternthal, 2007). This suggestion has been clarified by the fact that religious people tend to have healthier smokingand consumption habits (Tiliouine and Belgoumidi, 2009). Different religions have different behavioural restrictions. For example, eating pork is forbidden in both Islamic and Jewish faiths, but it is acceptable in the Christian faith.

When examining WTS in the EMR, research found religion to play an imperative role in the citizens' lives. Some previous research on smoking cessation has indicated that religion has sometimes influenced adult smokers to quit (Saeed, Khoja and Khan, 1996; Swaddiwudhipong, Chaovakiratipong, Nguntra, Khumklam, and Silarug, 1993). However, the effect of religion on the major population is slightly indefinite (Ugen, 2003), except for followers of religions that

strongly condemn the use of tobacco. Nevertheless, all religions stress valuing human well-being, and therefore do not approve of anything that might jeopardise it, including tobacco smoking. However, it is important to note that most disapproved behaviours are not prohibited entirely (El Awa, 2004).

The Holy Quran is the primary source of all life's teachings and rules to Muslims. In the Quran, it states: *"Do not with your own hands, cast yourself to destruction"* (2:195) and *"do not be wasteful"* (7:31) (WHO, 2004). The cited verses ask individuals not to be self-destructive, and not harm themselves in any way, including being wasteful. Bearing in mind that smoking damages one's health and causes monetary loss as well, most religious scholars view smoking as "Haram" ("prohibited") or "Makrouh" ("reprehensible") (Ghouri, Atcha, and Sheikh, 2006).

Other religious scholars of different faiths view smoking as undesirable behaviour. In Christianity, some Christian scholars argued that smoking is part of the evil that Satan challenges to spread. Smoking may deteriorate a Christian's spiritual association with the Lord (Marcus, 2008). In Judasim, preserving one's health is considered a "mitzvah" ("good deed") (Siegel, 1986); while the Jewish law "Halakha" prohibits the smoking of tobacco and its products. It is also prohibited to smoke during the Sabbath day. According to Hindu principles, tobacco consumption is a violation to Hinduism values, with its dangerous effect on one's health (Shafey *et al.,* 2009). Buddhism considers that whatever harms the body or the mind must be refrained from (WHO, 2008). Since tobacco is considered a harmful substance, *"all tobacco marketing should be banned"* and monks should abstain from tobacco (WHO, 2002).

In Egypt, Islam is the national religion. Almost 90% of Egyptians are Muslim and around 10% are of Christian faith (CAPMAS, 2016; US embassy report, 2017). As mentioned, Islam has religious principles that forbid and discourage the use of addictive substances, and considers anything that would harm health to be forbidden or haram (Yong, Hamann, Borland, Fong, and Omar, 2009); while others have argued that it is merely advised against or makruh (Ghouri *et al.*, 2006). A study that took place in Malaysia and Thailand by Yong and colleagues (2009) examined the role of religion and religious leadership on smoking and association with quitting. They found out that religious factors had a clear dependent association with making quitting attempts with Muslim Malaysians, but not for Thai Buddhists. Other studies have also linked

religion to WTS especially within respondents in Egypt. These studies saw an increase in smoking as a consequence of decreasing religious belief (Afifi *et al.*, 2013).

A prior study found that Egyptian Muslim men believed that WTS was sinful, owning to adverse health outcomes (Jawad, Nakkash *et al.*, 2015). On the contrary, a study on US Muslim college students found that religious beliefs on water-pipe and religiosity were not defensive factors against WTS (Arfken, Abu-Ras and Ahmed, 2015). Singh *et al.* (2012) supported this view. They investigated the connection between health and religious beliefs about WTS among rural males in Egypt. Their findings indicated that smokers were more likely to believe that cigarette smoking is a sin than WTS. The research presumed that smokers perceived water-pipes as not being as harmful as cigarette smoking due to the filtration process within water-pipe smoking. Accordingly, Singh *et al.* (2012) argued that water-pipe smokers maybe less susceptible to faith-based tobacco interventions.

When discussing WTS in the EMR, religion plays a vital part in society. Previous research on smoking cessation indicated that religion has sometimes influenced adult smokers to quit (Saeed *et al.*, 1996; Swaddiwudhipong *et al.*, 1993). However, in this study, the concern is how religious an individual is, i.e. the level of religiosity, and believes that it influences the attitudes of individuals towards WTS. Thus, the following hypothesis is stated:

H_3: Religiosity affects attitudes towards water-pipe tobacco smoking

3.5.4 Factors Associated with Smoking Behaviour Prediction

For the last three decades, scholars in the field of social and health psychology have applied the TPB in various behavioural domains, including safer sex (Bowen *et al.*, 2001), physical activity (Plotnikoff, Trinh, Courneya, Karunamuni and Sigal, 2011), fast food consumption (Dunn, Mohr, Wilson and Wittert, 2011), binge drinking (Todd and Mullan, 2011), smoking (Bursey and Craig, 2000), and many other behaviours. The popularity of the theory comes from its adaptability to numerous behavioural fields, as well as its clear conceptualisation and operationalisation of its constructs. Nevertheless, some research argued that the TPB's predictive abilities change across different behaviours that are being studied (Ajzen, 1991; Steinmetz *et al.*, 2016). Moreover, other research noted that the performance of behavioural theories changes

across cultural contexts (Godin and Kok, 1996). For this reason, it is crucial to review the performance of the TPB in predicting smoking behaviour, across different cultural contexts; and to specifically explore the efficacy of the TPB in predicting WTS intentions and behaviour.

Prior studies in smoking behaviour have tested the usefulness of the TPB and have established that the TPB was able to predict smoking onset in a number of studies (Guo *et al.,* 2007; Harakeh *et al.,* 2004; Harakeh *et al.,* 2005; O'Callaghan *et al.,* 1999, Su *et al.,* 2015; Van De Ven, Engels, Otten and Van Den Eijnden, 2007). For example, De Vries *et al.* (1995) found that intention to smoke was the strongest predictor of adolescents' future smoking behaviour. Their findings also found that the influence of antecedents of intention (attitude, self-efficacy, and social influences) was highly moderated through intention.

Harakeh *et al.* (2004) tested the TPB in the Netherlands. In this study, the TPB was used in order to predict adolescent smoking onset by extending the theory to include parental factors, as distal factors, such as: quality of the parent–child relationship, parental knowledge, and parental smoking behaviour. The results of the study revealed that smoking related cognitions, such as attitude, social norms, and self-efficacy indirectly affected smoking onset through intentions. Moreover, the parental factors (distal factors) along with the antecedents of intention (proximal factors) included in the model explained 57% of the difference in adolescents' smoking intention and 38% of the difference in adolescents' smoking. It was also found that parental factors under study did add to the prediction of smoking indirectly through intentions, indicating that parental influences affect smoking related cognitions which consequently affect smoking behaviour.

To understand differences between adolescent and young adults' smoking intentions, Kosmidou and Theodorakis (2007) drew upon the TPB to explore any differences, along with other constructs that are assumed to predict smoking intentions: knowledge and past behaviour. Through hierarchical regression analysis, it was found that all antecedents of intentions (attitude, subjective norms, and PBC) contributed significantly, with 69.9% variance in smoking intentions. However, when adding Knowledge and Past behaviour; only attitudes, knowledge and past behaviour were significantly associated with smoking behaviour. On the other hand, when antecedents of intentions were entered for adolescents, they explained 67.5% variance in smoking intentions, but only attitudes and subject norms were significant. According to their study, adults showed more enthusiastic attitudes towards smoking than adolescents, with lower

PBC over smoking and with higher intentions to smoke. Young adults also alleged they were more knowledgeable about smoking than adolescents. In this study, attitude was the strongest predictor of intention.

Su *et al.* (2015) examined the ability of the variables of the TPB and the influence of significant others in predicting smoking behaviour and intentions by conducting a cross-sectional study among 2,609 students in Shantou, Guangdong, China. The research was interested in understanding how the theory would perform in a different cultural context. Results of a comprehensive model where all variables were included showed that most of the constructs contributed to the studied smoking behaviour (ever-smoking, regular and current smoking), with only subjective norms regarding friends not being significant with current smoking. Regarding smoking intentions (in the next six months or five years), attitudinal and PBC variables were associated with variables of smoking intentions, while subjective norms was, yet again, not significant with variables of smoking intentions. The study noted that while subjective norms (regarding friends) were not statistically significant, associations between having some friends as current smokers and smoking intentions and behaviour were significant, with varied strength.

Even though the reviewed studies above confirm the effectiveness of the TPB in measuring smoking intentions and behaviour, prior research emphasised the importance of distinguishing between cigarette smoking and WTS behaviour (Maziak, Taleb, Bahelah *et al*., 2015). Hence, understanding the effectiveness of the TPB in measuring WTS intentions and behaviour is vital. When researching WTS studies that have employed the TPB, three main studies were identified: Athamneh, Essien, Sansgiry and Abughosh, (2017), Alanazi, Lee, Dos Santos, Job, and Bahjri, (2017), and Tahmasebi, Firoozabadi and Noroozi, (2017). Alanazi *et al.*'s (2017) study was used to predict possible cigarette smoking in the context of WTS, but not measuring WTS.

Alanazi *et al.* (2017) aimed to examine the possibilities of WTS leading to cigarette smoking, using the TPB. According to the study, the TPB, except subjective norms, was able to predict cigarette-smoking behaviour from current WTS. Findings also indicated that for water-pipe users, attitudes towards cigarette smoking (even though negative in this study), and views of easy/difficulty of cigarette smoking (PBC) directly influenced intentions to use cigarettes, accounting for 46% of variance in intentions to smoke cigarettes. These results showed that

attitudes and PBC were the strongest predictors of intentions, whereas subjective norms were not directly associated with intentions.

There is a recent proliferation of WTS in the United States, especially among adolescents and college students (Cobb, Ward, Maziak, Shihadeh and Eissenberg, 2010). Thus, studies of WTS were conducted. One study in Houston, Texas examined Arab American adults' intentions to quit WTS, using the TPB. This study was conducted by Athamneh *et al.* (2017). Their findings were rather interesting, with behavioural evaluations (part of attitude) and subjective norms (normative beliefs and motivation to comply) being the only significant predictors of intentions to quit WTS. Prior studies argued that a higher intention to quit is associated with a 'correct' behavioural evaluation towards WTS; clarifying the term 'correct' by adding that the respondent's evaluation of WTS as unsafe and toxic, and evaluating quitting as favourable for one's wellbeing. Unlike various other studies in cigarette smoking research, subjective norms were found to influence one's intentions to quit water-pipe smoking, and recommend that such findings can be used in awareness and educational programmes. Interestingly, while PBC was found to be the strongest predictor of intentions to quit smoking in previous research (Godin and Kok, 1996); this study found that PBC is not a predictor of intentions to quit among Arab Americans. Cobb and colleagues (2010) linked these findings to the nature of the behaviour under study. Since water-pipe smokers feel that they can easily quit WTS (Ward, Hammal, VanderWeg, Eissenberg, Asfar and Rastam, 2005), then the role of PBC is weakened. Thus, no association is found.

Tahmasebi *et al.* (2017) tested the efficacy of the TPB in predicting nicotine dependency among women in Bushehr, Iran. Reports stated that women in developing countries, like Iran, preferred WTS to cigarette smoking (Maziak, Rastam, Eissenberg *et al.*, 2004). Findings of this research showed that antecedents of intentions: instrumental attitude (behavioural beliefs, evaluation outcomes), experiential attitude, descriptive norms, PBC (control beliefs, perceived power), as well as self-efficacy were able to predict intentions to quit and nicotine dependency among female smokers, with variances of 40% and 34%, respectively. Subjective norms, including normative beliefs and motivation to comply, could not predict intentions or nicotine dependency, and was removed from the structural model. The strongest predictor of intentions and nicotine dependency in this study was self-efficacy, which was viewed as a subscale of personal agency.

Based on the reviewed studies and literature, it can be concluded that the TPB is an effective model in predicting intentions and behaviour across various behavioural domains, particularly within social and health behaviour. According to prior reviews and meta-analysis, the TPB has proved to be a sufficient predictor of intention and behaviour (Ajzen, 1991; Armitage and Conner, 2001; Godin and Kok, 1996; Hagger *et al.,* 2002; Schulze and Wittman, 2003). One of the benefits of the TPB is the availability of standardised tools for measuring its constructs, which gives the model leverage over other behavioural theories (Ajzen, 2006).

This study aims to better understand factors affecting WTS intentions in order to aid in the design and execution of social marketing campaigns and interventions dealing with WTS cessation. According to Steinmetz *et al.*'s (2016) meta-analysis, the TPB can be used as an effective tool for designing behaviour change interventions, such as WTS cessation. It is also argued that the efficacy of the TPB in predicting WTS is still in need of further research. Therefore, this study will use the basic TPB as the basis for its conceptual framework. This application of the TPB in this research does not serve as a contribution to the study, but rather assists in predicting WTS behaviour through extending the model, using the factors discussed throughout this chapter.

In line with Ajzen's view that beliefs (attitudes towards the behaviour, perceived behavioural control, subjective norms) antecede behavioural intentions, it is proposed that an individual's favourable or unfavourable evaluation of WTS (attitude) will influence their intentions to smoke shisha. Thus, this study hypothesises that:

H_4: Attitudes towards water-pipe tobacco smoking affect intentions to smoke

A person's confidence and control in the behaviour tested is claimed to have an effect on a person's intentions to behave. According to WTS research, young water-pipe users have high confidence in their ability to quit smoking at any time (Akl *et al.,* 2013). Dual smokers report that they find it easier to quit water-pipes than cigarettes (Ward *et al.,* 2005). However, according to Ward, Siddiqi, Ahluwalia, Alexander and Asfar (2015), certainty in one's ability to quit is inversely related to engaging in WTS. These conclusions gained support from Maziak (2014). In this study, it is assumed that a person's confidence and control in quitting WTS will affect their intentions to engage in WTS. Moreover, in a review by Akl *et al*. (2013) of the

motives, beliefs and attitudes towards WTS, it was found that in both Western and Middle-Eastern societies, most water-pipe smokers (79 to 98%) were highly confident that they could quit water-pipe smoking at any time (Asfar, Ward, Eissenberg and Maziak, 2005; Braun, Glassman, Wohlwend, Whewell and Reindl, 2012; Smith-Simone, Maziak, Ward and Eissenberg, 2008; Sutfin *et al*., 2011; Ward *et al*., 2007). One of the reviewed studies claimed that 80% of smokers felt that quitting water-pipe was easy, unlike cigarette smoking (Ward *et al*., 2005).

In that study, 62% of those interested in quitting water-pipe did not perceive any difficulty in doing so. Controversially, in one study in Syria, more than half of water-pipe smokers believed that it would be challenging to quit smoking (Almerie *et al*., 2008). This study assumes that a person's confidence and control in quitting WTS will affect their intentions to engage in WTS, and therefore assume that:

H_5: Perceived behavioural control affects intentions to smoke

Prior studies argued that an individual's perceived approval of certain behaviour by significant others can affect their intentions to adopt the behaviour in question. In this study, subjective norms represent the perceived social pressure of adopting or quitting WTS behaviour. However, when discussing peer influence, other influences on behaviour are considered, such as role modelling and imitation, as illustrated earlier in Section 3.4.2.1. In the case of WTS, this study argues that subjective norms will therefore have an effect on an individual's intentions to smoke shisha. The current study suggests that:

H_6: Subjective Norms affect intentions to smoke

3.5.5 The Fear of Negative Evaluation

Social psychology theories were used by researchers in order to understand smoking and aid in developing prevention programmes. Through its application, it was recognised that smoking behaviour and initiations are considered socially motivated behaviours. It was made clear that there are social causes to smoking that are worth investigating (Chassin and Sherman, 1990). With this realisation in mind, and as mentioned in the previous section (Section 3.4.2), one cannot ignore the impact that individual's peers, family and significant others have in the

engagement in WTS (Jawad, Nakkash *et al.,* 2015). Moreover, the appeal of WTS among adolescents and young adults appears to be social as well as personal in essence. Furthermore, the WTS is considered a custom in tradition that is practiced commonly among families (Martinasek, McDermott and Martini, 2011). Situational influences, such as socialisation with friends and intimacy linked with smoking in a group, have been also shown to encourage WTS, creating a sense of social pressure to engage in smoking (Maziak, Eissenberg, Rastam *et al.,* 2004).

The need to conform to peers and family members can create a sense of pressure on individuals and influence their decision regarding engagement in WTS. Seeking social approval is common within smoking literature. Earlier studies suggested that young people take up smoking because of direct pressure exerted by others, mainly peer pressure (Evans *et al.,* 1978). For example, in a study by Scalici and Schulz (2014), in Italy, found that peers' and parents' approval impact students' smoking intention. It was also noted that students' age highly moderated this relation: the effect of parents' approval declined for older adolescents, while the effect of peers' approval grew with older ages. This study also found that although the effect of parents' injunctive norms declines with adolescents' age, parents' opinion still remains to impact intention more than peers' injunctive norms (Scalici and Schulz, 2014).

Earlier research further stated that younger individuals are less expected to smoke if they view their parents react negatively to such behaviour (Distefan, Gilpin, Choi and Pierce, 1998; Kodl and Mermelstein, 2004; Simons-Morton and Farhat, 2010). A study in Egypt, by Israel, El-Setouhy, Gadalla, Aoun and Mohamed (2003), found that both light and heavy water-pipe smokers strongly disapprove of their sons or daughters smoking. The interviewees stated that the main action they would take if they found out that their children were smoking is to advise them to quit. The fear of being unfavourably viewed by one's social circles is likely to affect one's behavioural responses towards WTS. The fear of being unfavourably viewed by social groups is scientifically known as the fear of negative evaluation (FNE). It is defined as: *"the apprehension an individual might have towards negative evaluation, the distress he or she might experience from those evaluations, the tendency to avoid situations that might entail those negative evaluations, and the expectation that others would evaluate him or her negatively"* (Watson and Friend, 1969, p.449).

According to Watson and Friend (1969), people with low FNEs are less concerned about evaluations, while those with high FNEs are more anxious of negative evaluations. It is understood that people with high FNEs work harder to seek approval from others, fear the loss of social approval, and are more socially anxious than low FNEs (Leary, 1983). In the context of this study, if an individual feel that engaging in WTS will make them more likeable and popular around their friends, or fear that if they reject the peer pressure enforced to smoke, then they will be forced out of their social circle. Thus, they are presumably going to water-pipe smoke. On the other hand, individuals might refrain from WTS or even have the intention to quit if they believe that their parents might disapprove such behaviour, and that negative consequence might arise from such behaviour, e.g. parents being disappointed in them, or punish them in other ways.

FNE has been studied among a number of different contexts, including drinking behaviour (Villarosa-Hurlocker, Whitley, Capron and Madson, 2018), sexual harassment (Halper and Rios, 2018), weight/shape concerns among adolescents (Trompeter *et al.,* 2018), problematic smartphone use (Wolniewicz, Tiamiyu, Weeks and Elhai, 2018), advertising strategies in health issues (Yoon, 2015), quality of life (Dryman, Gardner, Weeks and Heimberg, 2016), and eating attitudes (Gilbert and Meyer, 2005) among others. In these studies, FNE had an impact on all those different behaviours. Even though the FNE was never measured within any smoking study reviewed, some evidence suggested that it might play an important role in moderating smoking behaviour. For instance, the social image of females in Middle Eastern societies is very important. The fears of being negatively evaluated by individuals (not necessarily close social groups) are heightened.

A study by Islam and Johnson (2005) investigated the influence of known psychosocial smoking risk factors on Egyptian adolescents' cigarette smoking behaviour. In this study, a variable "knowledge of the short-term consequences of smoking" included statements, such as: smoking cigarettes causes bad breath, causes teeth to become yellow, causes clothes to smell bad. Findings stated that "knowledge of the short-term consequences of smoking" was only significant for females. Egyptian adolescent females placed a greater meaning on their appearance than the males. As a result, they are less susceptible to a behaviour that may negatively influence their physical appearances and attractiveness to the opposite sex.

Islam and Johnson's (2005) study revealed that males were more likely to smoke than females. The research stated that this might be due to cultural elements associated with 'patriarchal societies'. For instance, in the Arab countries, it is acceptable for males to smoke, but is considered a cultural taboo for females (Nassar, 2003; Islam and Johnson, 2003). Therefore, the low smoking rates of females' may be an underestimation of the true female smoking prevalence, as many young females may be unwilling to declare of their smoking behaviour (Hassan, 2003). Furthermore, Beech and Scarinci (2003) conducted a study regarding smoking attitudes and practices among African Americans. The study revealed that the strongest reason for not smoking at home with their parents around is the fear of being caught by a family member, stating that smoking in front of their parents was regarded as a sign of disrespect.

Whether it is to impress friends or avoid crossing parents, findings of these mentioned studies implied a fear of being unfavourably evaluated by people. The fear of the negative consequences can affect youth and young adults' water-pipe smoking behaviour. Since one focus of this study is on researching the effect of social groups on shisha smokers' behaviour, it is important to consider an individual's apprehension towards being evaluated (negatively evaluated) by others. As noted earlier, social groups play an essential role among the youth and young adults in influencing the choices they make and their behaviour. In this study, this disposition is a psychological factor that might mediate the relationship between the attitudes that are formed regarding WTS and their intentions to smoke shisha. Hence, this study strives to understand the impact of FNE on the attitude-intention relationship, and proposes that:

H_7: Fear of negative evaluation moderates the relationship between attitudes towards water-pipe tobacco smoking and intentions to smoke

3.5.6 Role of Gender in Water-pipe Tobacco Smoking

Understanding societal perceptions and practices regarding WTS can help with the effective design and implementation of preventive interventions. One of the intriguing and controversial findings when reviewing WTS literature is the influential role of gender, specifically in the EMR. According to previous literature, gender plays an important role in health-related views and behaviour in the EMR, unlike developed countries (Clarke *et al.*, 1993; Maziak *et al.*, 2003). Essentially, female cigarette smoking is commonly an unacceptable behaviour and is frowned

upon in local cultures of Middle Eastern countries (Maziak, 2002; Omar, 2000). Hence, women's cigarette smoking rates are the lowest in these nations. Interestingly, this is not the same societal view that is held against WTS. Prior studies suggested that family attitudes towards smoking behaviour involving younger females are less strict for shisha use than for cigarettes (Maziak, Rastam, Eissenberg *et al.*, 2004).

Prior research suggested that WTS is more popular among women (Tamim *et al.*, 2003) and is alleged to be more acceptable than cigarettes (Dar-Odeh and Abu-Hammad, 2011; Maziak, Rastam, Eissenberg *et al.*, 2004). A stimulating debate about gender differences arose in a study by Afifi *et al.* (2013). They explored the social norms and attitudes which lead to water-pipe being a more acceptable form of tobacco smoking for women than cigarettes in the EMR. The study was conducted in the form of focus group discussions across four countries: Egypt, Syria, Lebanon and Palestine. Findings from the focus groups suggested that in the four countries, WTS was gendered in the perception of society. Some participants mentioned that there is a need for male approval for women to smoke. Moreover, the discussions also revealed whether it was appropriate for women to smoke privately or in public. It was declared that women from Lebanon were more accepting of women engaging in WTS publically (Afifi *et al.*, 2013). Women in Egypt still held their traditional gender roles. Egyptian participants stated that there was a negative image of women smoking water-pipe (Khalil *et al.*, 2013). Another study by Labib and colleagues (2007) in Egypt reported that three out of every four female water-pipe smokers preferred water-pipe smoking to cigarette smoking. The participants considered it to be much less dangerous than cigarettes. In fact, other studies state that water-pipe smoking has become increasingly fashionable among Egyptian youth and women (Gadalla *et al.*, 2003; Israel *et al.*, 2003).

A study by Maziak and colleagues (2003) revealed that one of the main reasons why women do not smoke in Aleppo, Syria is for the traditions and norms of the society, followed by health considerations. Interestingly, married women in this study were less driven by traditions and norms, but more to abide to the rules of their marital relationship. This finding was supported in other studies (Maziak, Mzayek, Asfar and Hassig, 1999). When reviewing gender related literature, it seemed that age and marital status of the woman using a water-pipe is an important factor to consider in some societies. Some societies consider WTS to be offensive if a young

single woman is using a water-pipe; it is more acceptable for an older married woman to engage in WTS (Afifi *et al.*, 2013).

A recent study by Forden and Carrillo (2016) assessed smoking and attitude toward smoking policy at a university in Egypt. They found that 20% of their sample (on campus) was female smokers, a much higher percentage than the national prevalence that is less than 1% (WHO 2013). Thus, this statistic suggested that gender specific prevention programmes should be executed. Nassar's (2003) research noted that there are an increasing number of women and teenagers smoking in Egypt. A noticeable increase in the number of young Egyptian women who smoke shisha in cafes and restaurants was highlighted. Moreover, other studies suggested that water-pipe smoking is being perceived as closer to the local traditions and may evade the societal restrictions of cigarette smoking by women in the EMR (Maziak, Asfar and Mock, 2004)

Further research related to the popularity of WTS among women and younger age groups declared that the fascination for this smoking is due to the innovative and attractive designs that water-pipe manufacturers offer to the market (Nakkash, Khalil and Afifi, 2011). These inventive designs, colours, patterns, and decorations made smoking much more appealing to women who are drawn in by aesthetics. This strategy is not new, as research on tobacco industry documents discovered that the industry has specifically modified cigarette designs to target women (Carpenter *et al.*, 2005), changing design features, such as packaging, length, flavours, etc. The media was also believed to play a role in attracting female smokers. The media would usually portray women who smoke water-pipe as glamorous and sexy. Therefore, eye-catching models encouraged women to engage in WTS (Nakkash *et al.*, 2011).

Reviewing previous literature regarding the contradicting societal views between cigarette and water-pipe smoking among women had led this research to believe that there might be some central differences between how males and females are affected by their peers, parents, their personal values, religiosity, and their attitudes towards WTS. Prior studies debated the role of gender, and the controversy around the acceptance of WTS among females (Maziak, 2002). Hence, this research assumes that gender places a moderating role in shaping attitudes towards WTS. Accordingly, the research hypothesises could be developed as:

H_8: Gender moderates the relationship between the research variables and attitudes towards water-pipe tobacco smoking

3.6 Conclusion

Smoking had been found to be a health-damaging habit that causes various negative health consequences, leading to a premature death. Prior tobacco research also showed that there are several types of smoking; varying between cigarettes, pipes, and other forms. Tobacco smoking had been prevailing in spite of its negative results. Despite the preventive actions taken by the WHO and its target to reduce the number of smokers by 30% by 2025, this target may be compromised. This is due to the fact that some countries are failing to achieve the annual target while other countries are not showing any reduction rates. In contrast, the prevalence of smoking in Egypt in 2010 is 22% and is intensively increasing (Fouda *et al.*, 2018).

In Egypt, one of the common methods of tobacco smoking is the WTS, which was formerly prevailing only among older men with a low socioeconomic level. Currently, the situation has evolved where WTS behaviour is widespread among young males and females, as well with varying socioeconomic levels. Although various regulatory and prevention methods have been suggested (such as taxation and smoke-free policies), they take time to implement, and sometimes are very poorly executed (Jawad *et al.*, 2018). Hence, it has been argued that other methods, such as the use of social marketing campaigns and interventions, may help curb this epidemic. Thus, in order to create effective social marketing campaigns and interventions, it is important to first understand the influences that affect WTS behaviour among youth and young adults. Many studies have been conducted to explain the social and health behaviour regarding WTS, with fewer studies conducted in countries, like Egypt, where this behaviour is endemic.

This study aims to examine specific determinants of WTS behaviour through adopting various theories and individual level constructs in order to predict WTS intentions. Reviewing previous studies and theories of social and health behaviour led to the development of various hypotheses. It had been concluded that, within the application of the TPB, personal values (openness to change and conservation), socialisation agents, and religiosity are determinants of WTS. Moreover, moderating roles of both the fear of negative evaluation and gender are examined in order to better understand how they influence WTS behaviour. Hence, it is hypothesised that:

H_1: Personal Values affect attitudes towards water-pipe tobacco smoking

H_{1a}: *Openness to Change affects attitudes towards water-pipe tobacco smoking*

H_{1b}: *Conservation affects attitudes towards water-pipe tobacco smoking*

H_2: Socialisation Agents affect attitudes towards water-pipe tobacco smoking

H_{2a}: *Peer Influence affects attitudes towards water-pipe tobacco smoking*

H_{2b}: *Parental Influence affects attitudes towards water-pipe tobacco smoking*

H_3: Religiosity affects attitudes towards water-pipe tobacco smoking

H_4: Attitudes towards water-pipe tobacco smoking affects intentions to smoke

H_5: Perceived behavioural control affects intentions to smoke

H_6: Subjective Norms affect intentions to smoke

H_7: Fear of negative evaluation moderates the relationship between attitudes towards water-pipe tobacco smoking and intentions to smoke

H_8: Gender moderates the relationship between the independent research variables and attitudes towards water-pipe tobacco smoking

Figure 3-10 presents the proposed research framework:

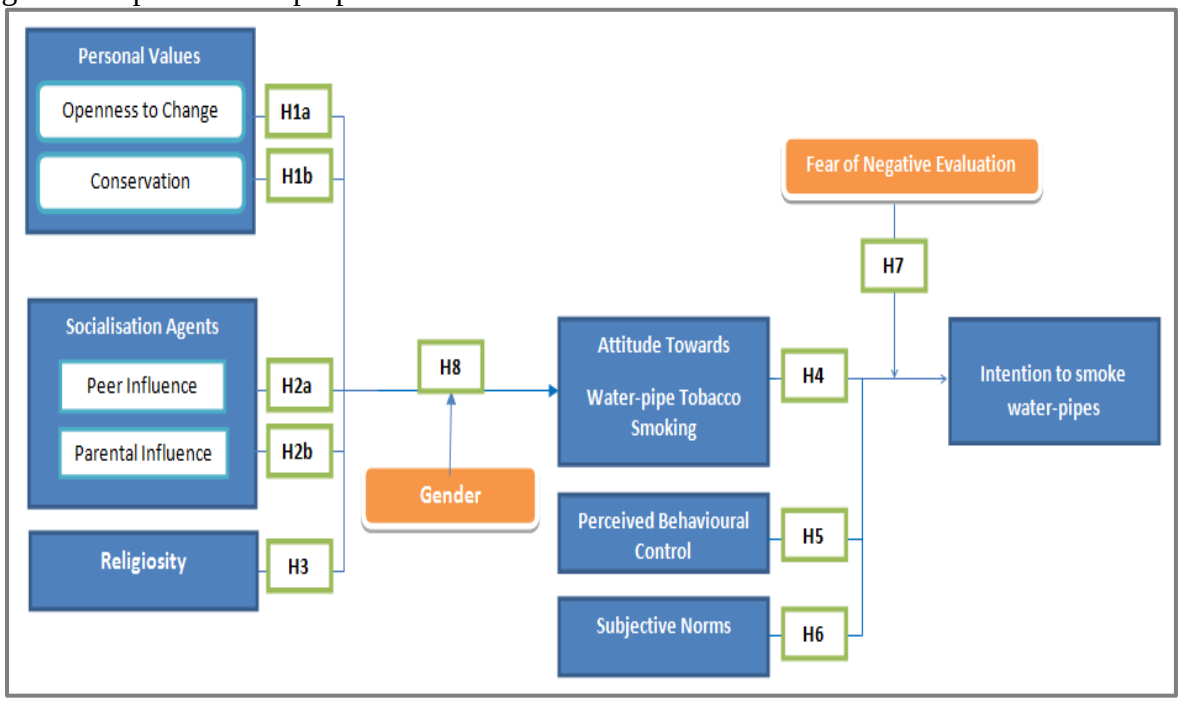

Figure 3-15: Research Conceptual Framework

The next chapter is designed to set the research methodological choices to introduce the current research to be able to determine factors explaining WTS among the youth and young adults.

Chapter Four

Research Methodology

Chapter Four

Research Methodology

4.1 Overview

This research aims to understand how personal values such as conservation and openness to change, the influences of socialisation agents such as peers and family, as well as individual religiosity shapes consumers' attitudes and behavioural intentions towards WTS. It also aims to examine the moderating role of the fear of negative evaluation in the relationship between attitudes towards WTS and intentions to smoke. In addition, it aims to investigate the moderation role of gender in the relationship between personal values, socialisation agents and religiosity and the attitude towards WTS. The factors discussed in the previous chapter were identified as per reviewing the literature as they are the ones that are expected to influence the attitude and intentions of the youth and young adults towards WTS in the Egyptian context. Thus, the relationships were hypothesised and the conceptual framework was constructed.

Going through this chapter, it could be observed that the research methodology is a step towards the empirical study of this research through which the research hypotheses can be examined. Thus, this chapter illustrates how this study is done and how data could be analysed to explore responses for the research hypotheses. This chapter outlines the process of study's relevant research philosophy, approach and design; as well as deciding on the appropriate analysis techniques by which the relationships presented in the research hypotheses are to be tested. The choice of the research design and methods is done by introducing a description of different research types and approaches, as well as justifying the reason beyond choosing a specific type or approach. In addition, data collection methods and sampling are displayed and the statistical techniques are assigned for testing each of the hypotheses under study.

The research philosophy is introduced in the second section, while the research approach is discussed in the third section. The fourth section is designed to figure out the research strategy. The data collection, including its methods and processes, is introduced in the fifth section with a justification of selecting the data collection method relevant for this research. Moreover, an explanation of the target population for this research along with the sample used for the current

research is outlined. The sixth section discusses the research time horizon and the seventh section presents the data analysis techniques used to test the research hypotheses in the empirical study. Finally, the research ethics are represented in the ninth section of this chapter and the last section outlines a conclusion for the current chapter.

Figure 4-1 displays a chart for mapping the current chapter to provide the methodological choices and discuss the research framework.

Figure 4-1: Chapter Four Outline

4.2 Research Philosophy

The research philosophy that a researcher adopts gives an indication about how they view the world. These indications or assumptions guide their whole research approach and strategy; as well as the methods used as part of the strategy (Saunders and Townsend, 2016). A researcher's worldview is mainly concerned with their interpretation of the relationships and how they are being developed (Creswell, 2014).

In this section, research philosophy is discussed, representing the set of perceptions about the aim of the research; whether there is a truth that may be observed by the research or it is just our perceptions about the reality. As such, the research philosophy represents the basic assumptions regarding the research role in people's lives. It is also about whether an objective result can be found through the research, with a logical approach that should be determined by the research philosophy (Sekaran and Bougie, 2016).

There are many research philosophies that serve as a guide for various studies that are carried out. These philosophies are different in many aspects. In business and management research, three epistemological approaches are employed: interpretivism, realism and positivism (Saunders and Townsend, 2016). **Interpretivism** is a worldview that believes that it is necessary for the researcher to understand differences between humans in our role as social actors (Saunders and Townsend, 2016).

Scientists and researchers who adopt an interpretivism epistemological position share a view that the matter of the social sciences differs in essence from that of natural sciences, hence requiring a different rationale to research procedures. Mainly, it requires a research approach that highlights the uniqueness of humans from that of the natural order (Bryman, 2016).

Interpretivism philosophy emphasises how people build knowledge; it studies the accounts people give of issues and topics and how people get to these accounts. Interpretivists are particularly involved in how people's views of the world result from interactions with others and the context in which they occur. The research methods of interpretivist researchers are often qualitative in nature. They collect rich data through focus groups and unstructured interviews, seeking the contextual uniqueness of the world that is being studied. Certainly, interpretivists

focus on understanding a specific case rather than results generalisation, assuming generalising about objective reality does not exist (Sekaran and Bougie, 2016).

Therefore, in conclusion, the interpretivism philosophy states in what way research should be done. It is believed in this philosophy that the world is basically mental or mentally constructed. Thus, interpretivists aim to comprehend the rules people use to make sense of the world by alternative approaches to research instead of pursuing the objective certainty.

Another philosophical stance is **realism**, which argues that what the senses show us as reality is the truth: that objects have a presence that is independent of the human mind (Saunders and Townsend, 2016). This branch of epistemology is rather similar to positivism, where a scientific approach is undertaken to the collection of data and to explanation and acquiring of knowledge (Byrman and Cramer, 2012).

Two forms of realism are present: *Direct realism* which claims that what we comprehend through our senses is the actual truth), and *Critical realism* that debates that what we experience through our senses is nothing but images of the things in the real world but not the actual things (Saunders and Townsend, 2016).

Therefore, the realism philosophy is an intermediary philosophy between the above-mentioned philosophies. According to this philosophy, there is an objective truth but it cannot be observed or reached objectively. The research role is trying to reach this objective truth or to progress toward this goal. Moreover, the pragmatism philosophy does not determine specifications for the good research. The research is evaluated based on the improvements, which can be applied using its findings in the reality. They focus on the link between the theory and the practice (Sekaran and Bougie, 2016).

At the far end of interpretivism, in contrast, lies **positivism**. Researchers who adopt a positivist philosophical stance use scientific methods to develop knowledge. Knowledge developed through a positivist's research is based on observations and measurements of the objective reality that exists around individuals (Creswell, 2014). Hence, this stance uses existing theories to develop hypotheses that are to be tested and confirmed or rejected in order to develop a theory that can be further tested (Saunders and Townsend, 2016). However, such an approach to

research should be essentially value-free, i.e. as objective as possible, suggesting that social phenomena exist separate from social actors (Lim and Ting, 2012).

Thus, from the positivist perspective, science and scientific research is perceived as the way to reach certainty. Positivists consider that there is an objective truth in the reality in order to adequately understand the world and consequently being able to interpret, forecast, and control it. According to positivism, when using scientific approach for research, everything is classified into rules of cause and effect that can be distinguished. In positivism, the evaluation for research contains rigor and replicability, the dependability of observations, and the generalisability of results. Positivists believe that reliability of observations and generalisability of results are vital. They develop models that can be investigated by means of a fixed, prearranged research design and unbiased measures by using deductive reasoning. Experiment is the followed technique by positivist investigators, which authorises them to examine cause-and-effect relationships.

In this thesis, the positivism philosophy is the standpoint that guides the research, where the foundations of behavioural and social theories are applied to study the consumer behaviour as the main approach to this research. From these theories, such as the theory of planned behaviour (TPB), the theory of basic values, and other theories of consumer socialisation, hypotheses are developed and empirically tested. Thus, this thesis considers that the objective truth is represented in the theories used to develop the research hypotheses.

As such, the study has clear constructs which are developed as per reviewing the literature. These constructs were represented in openness to change, conservation, socialisation agents (peer influence and parental influence), religiosity, attitudes towards WTS, PBC, subjective norms, intention to smoke, FNE and gender. Such constructs were identified through theories investigated in previous studies related to consumer behaviour.

The positivism philosophy is used here as it is believed that reliability of observations and generalisability of results are vital through testing the constructs developed from literature using a representative sample and a pre-developed scale. A model is to be developed and investigated by means of a planned research design and unbiased measures by using deductive reasoning of having general theories as mentioned and such theories are examined in the case of WTS.

4.3 Research Approach

A researcher's choice of the research approach stems from the philosophical stance that guides the entire research (Burns and Bush, 2014). According to the research approach, the data collection method and procedures are determined within the research plan and framework. Such selection helps in specifying the required analysis, which in turn figures out a relevant response for the main research question (Burns and Bush, 2014).

In the same way, Cooper and Schindler (2014) claimed that specifying the research approach is considered as a supporting stage for the researcher to specify the research conceptual model as well as the research method for sampling and sample size, research variables operationalization and measurement, techniques used for data analysis, which links the research plan with the research question (Creswell and Clark, 2017). There are several classifications of research approach: descriptive, exploratory, explanatory and causal.

First, **descriptive** research is used in studies that aim to provide an orderly description of a problem that is well structured and clear (Cooper and Schindler, 2014). Its emphasis is on the research of the structures of the population or phenomenon with respect to conditions and responds to the questions "who, what, when, where, and how" without giving any justifications for the reasons behind the findings (Neuman, 2013). Descriptive research is used in research with the aim of providing a systematic description that is real and as accurate as possible; especially when the topic being investigated is clear, without the goal to understand cause and effect associations (Cooper and Schindler, 2014).

Second, **exploratory** research research is assigned when the research problem is still not well-structured and the researcher does not have a complete idea about the research scope due to the lack in the information required to describe the research problem. Therefore, the researcher in this type of research needs to well understand the research problem to be able to clarify its scope without providing definite evidence (Neuman, 2013).

Third, **explanatory and causal** research focuses on studying the research problem in order to create causal relationships between constructs that result in a given behaviour (Cooper and Schindler, 2014; Zikmund, Babin, Carr and Griffin, 2013).

In this study, the researcher aimed to investigate the relationship between the openness to change, conservation, socialisation agents (peer influence and parental influence) and religiosity and attitudes towards WTS. It also provides an understanding of the relationship between attitudes towards WTS, PBC and subjective norms and the intention to smoke. In addition, it evaluates the moderation role of FNE between attitude towards WTS and intention to smoke. Besides, it tests the moderation role of gender between the research variables (openness to change, conservation, peer influence, parental influence, and religiosity) and attitudes towards WTS. As such, this study aims to evaluate the constructs under study by thoroughly examining and describing the relationships present among them. Thus, the researcher finds that a **descriptive approach** is best used to address the research problem.

Regarding the methodological approach, the research approaches are commonly divided into two main forms: **deductive** and **inductive**. When combining both approaches, Saunders and Townsend (2016) define it as an *abductive approach*. The deductive approach is undertaken when the researcher develops a theory and hypotheses and designs a research strategy to empirically test the hypotheses at hand (Saunders and Townsend, 2016). On the other hand, in an inductive approach, the data is collected and only after analysing the data, a theory is developed. The deductive approach takes more of a "testing theory" method, where the inductive approach takes a "building theory" viewpoint.

In this research, the researcher finds that a **deductive approach** is best used to address the research problem, as the research is investigating consumer behaviour that is associated with WTS using existing theories such as the TPB and other theories that are used to deduce, describe and test hypotheses related to the formation of attitudes towards WTS and individual's intentions to smoke. This approach will aid this research in gaining additional knowledge of the nature of the research problem, guide the research strategy by which the data will be collected and tested.

4.4 Research Strategy

The philosophical position and research approach guide the researcher when selecting the way they will investigate the research problem and study. There are two main research design alternatives that can be approached: qualitative research and quantitative research. **Qualitative** research is undertaken to explore and comprehend the meaning individuals and groups assign to

a social or human problem (Creswell and Clark, 2017). However, the **quantitative** approach is adopted when relationships between various constructs needs to be understood and as such, quantifying the data collection and analysis procedures is carried out (Bryman and Bell, 2015; Creswell, 2014; Sekaran and Bougie, 2016). Some studies follow a *mixed methods approach* that combines both quantitative and qualitative approaches (Saunders and Townsend, 2016).

Since this study uses a deductive approach, a quantitative method is followed. Hence, the focus is on collecting, testing, and deducing numerical data in a planned, organized manner by using statistical techniques and a large representative sample of the population. This thesis uses this approach to provide deductive reasoning to create meaning, establish, confirm, or validate the relationships between variables in order to provide generalisations that contribute to the theory. In this study, a research problem is first identified and uses various theories to formulate hypotheses then analyse the quantitative data to confirm and generalise the findings. This strategy had been followed as there is a well-structured theory and reliable constructs represented in openness to change, conservation, socialisation agents (peers and parents), religiosity, constructs of the TPB (attitudes towards WTS, PBC, subjective norms, intentions to smoke) as well as the FNE and gender.

The goal of this research is to gain an understanding of the formation of individual behaviour associated with WTS. Outcomes of this research can significantly contribute to the limited literature on consumer behaviour associated with WTS and social marketing in the WTS context, and subsequently be able to aid marketers and policy makers in designing social marketing campaigns that promote water-pipe tobacco smoking cessation. Academic literature as well as the planning and design of interventions and campaigns need quantitative data that can be generalised and can be further used for decision making and for tailoring campaigns to different segments of water-pipe tobacco smokers (e.g. males and females, different age groups, different family structures etc.). The quantitative method in this study was descriptive in nature since it was designed to gain more information and identify particular characteristics within this field of study.

According to the classifications stated above of research philosophy, research approach and strategy, it could be argued that this research is following the positivism philosophy, as it applies the theories discussed by the researcher in literature and examines the behaviour of water-pipe

tobacco smoking in Egypt as well as the intention to smoke using a water-pipe. Therefore, constructs had been defined, where a descriptive deductive approach is used to describe the relationship between the research constructs through a quantitative design implemented using pretested scales.

This thesis aims to use the outcome of such analysis, i.e. quantitative data to explain individuals' behaviour towards water-pipe tobacco smoking and fill gaps in academic literature concerning consumer behaviour, WTS and social marketing. As mentioned earlier, such data can aid marketers and policy makers in designing social marketing campaigns that market water-pipe tobacco smoking cessation. Hence, this study finds that the positivist philosophical worldview – or epistemology – is the appropriate foundation of this research, where problems studied under this philosophy reflect the need to identify and assess the causes that influence outcomes (Creswell, 2014), and convey quantifiable data that can be used to develop social marketing programmes.

Subsequently, the study used deductive reasoning to explain the theories and the research constructs obtained in the previous step. As a preliminary step to begin the quantitative approach, the study conducted focus groups with the aim of (1) validating and confirming the research variables gathered from the literature review and (2) testing and further developing the questionnaire that will be used for the quantitative data collection in the study. Although WTS has been embedded within Middle Eastern culture for decades, most of the empirical work and various studies undertaken take place in other countries with little focus on Egypt. Moreover, the theories and scales used to measure the variables in this study were developed in Western countries and can include certain statements or words that might not be applicable in Egypt or might have another meaning to the Egyptian respondents. As such, preliminary focus groups can help tackle these concerns.

Hence, after conducting the focus group and validating the research variables, a quantitative design is applied using a questionnaire administered from pretested scales of the assigned variables. To confirm the development of the questionnaire, a pilot study was conducted as well. The questionnaires were distributed among 50 respondents, to check the presentation of the questionnaire. A pilot study allowed the gathering of information prior to a larger study, in order to improve the quality and proficiency of the quantitative instrument. It also allowed detecting

any problems in the questionnaires before distributing them on a larger scale (Bryman, 2016). Figure 4-2 shows the research strategy.

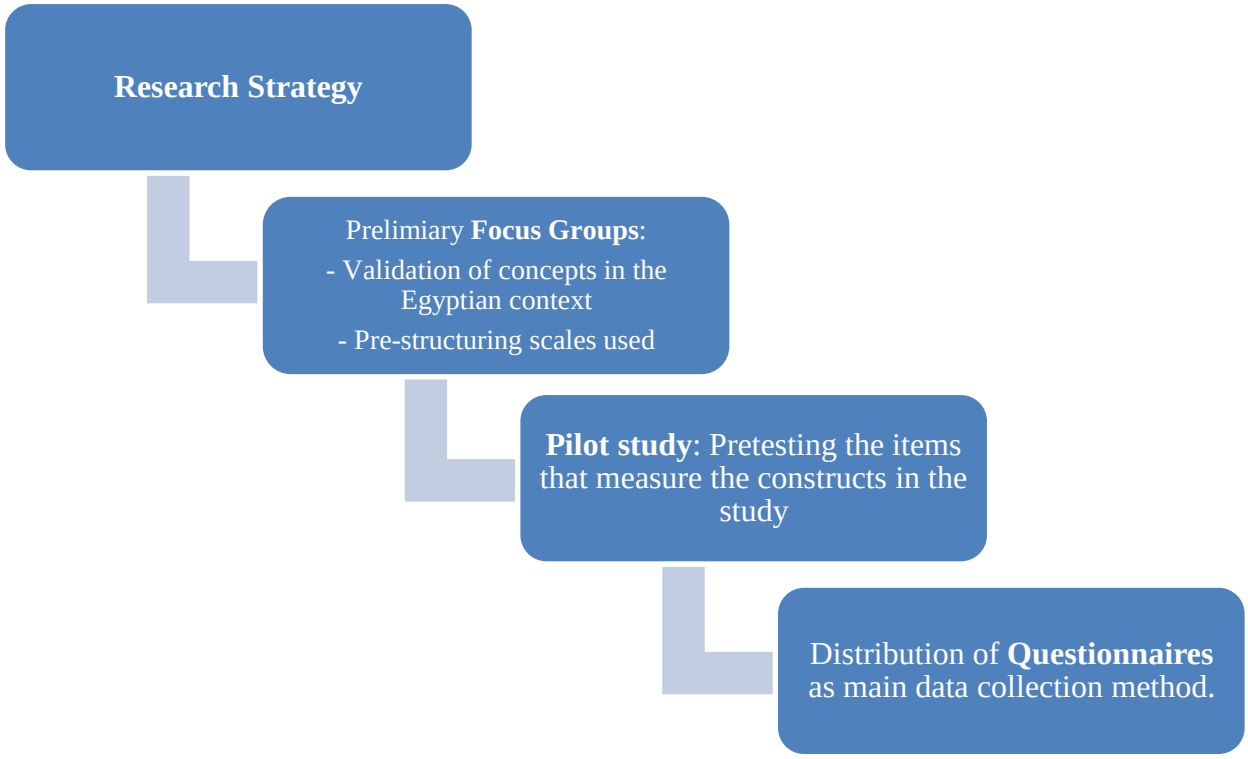

Figure 4-2: Research Strategy

The following section explains in details the data collection process and how the questionnaire was adapted after handling preliminary steps of focus groups and pilot study to validate the research variables.

4.5 Data Collection and Sampling Procedure

There are different data collection methods that are determined based on the research approach and strategy that are specified in the previous sections. Data collection methods are like questionnaires, interviews, observations, and experiments (Johnson and Christensen, 2008). Interviews are used in case of qualitative research approach, while, most often, a questionnaire is used to get a quantitative result. This research used administered questionnaires to collect the needed data. It contained a set of systematically organised and structured questions in which response-options were predetermined to get the desired information from respondents. Questionnaires were suitable to use when researchers knew exactly what was required. Hence,

they always had a definite purpose that was related to the objectives of the specified research (Bryman, 2016; Sekaran and Bougie, 2009).

Administered questionnaires have some advantages to this study, as the data collection method was low cost and extensive training was not necessary for the distribution of the questionnaires. Moreover, the administered questionnaires were useful in describing the features and traits of the large population and made large samples feasible. The questionnaires accommodated the researcher in gaining massive data to test the existing hypotheses. Before the process of data collection, the study should be precise regarding the target population and the sample used for the purpose of research. The following sub section introduces the population and sample (Section 4.5.1). The second sub section presents the research variables for which the sample collected was asked about (Section 4.5.2). The third sub section describes the questionnaire and how it was designed to ask the sample selected about the research variables (Section 4.5.3).

4.5.1 Population and Sample

The population is defined as the total number of all objects, subjects or individuals of interest that conform to a set of specifications and characteristics, and through which data can be collected and analysed. Typically, obtaining data about all members of a population is not available and very difficult (Fowler, 2013). Thus, a target population should be defined, which is the group to whom the research applies or who are in a position to answer the questions and apply the questionnaire results. The target population is defined according to the data collection method used, as the youth and young adult smokers of water-pipes in Egypt, aging from 18-30.

Sampling techniques help researchers reduce the amount of data that needs to be collected by collecting data from certain elements of the population. This reduction of data gathering is crucial because of time, cost and access constraints that make it impossible for the researcher to collect data from all possible elements of the population (Saunders and Townsend, 2016). These sampling techniques are divided into two categories: probability and non-probability.

In probability sampling, each unit of the population has an equal chance of being selected. A representative sample of the population is assumed to be the result of such a method of selection, but with the presence of an accurate and updated sample frame (Bryman, 2016). A sampling

frame could be identified as a list that includes all the target population units through which the researcher can select the sample for the research (Saunders, Lewis and Thornhill, 2009). Although the representation of the population makes the data more generalizable, the difficulty of obtaining a sample frame makes probability sampling difficult to use in business and marketing research (Saunders and Townsend, 2016).

However, non-probability sampling implies that some units or elements in the population are more likely to be selected than others, i.e. random selection method has not been used to select the sample (Bryman, 2016). There is a variety of non-probability sampling techniques used by researchers, depending on the kind of data they seek to answer their research questions, or the resources they have at hand. Non-probability sampling types include: Convenience sampling, Snowball sampling, Purposive (Judgmental) sampling and Quota sampling. In this current study, purposive sampling was used as the most suitable sampling technique for the nature of this research and the data needed from the population under study. However, quotas were used to ensure population representation. The next paragraphs briefly explain the various types under non-probability sampling and will give justifications for the chosen sampling technique.

A convenience sample is one that is selected by the researcher based on the accessibility of the elements of the sample. Even though the data that a convenience sample often produces is hardly generalizable, it is often used in organisation and social research as it is less time-consuming and less costly (Bryman, 2016). Snowball sampling can be considered a form of convenience sample (Bryman and Cramer, 2012), by which the researcher contacts one or two cases of the population and ask these cases to identify or refer some other cases and these referred to cases recommend others and so on, hence the sample 'snowballs' (Saunders and Townsend, 2016). This type of sampling technique is often used when the elements of the population are difficult to identify and contact. Some researchers have suggested that snowball sampling is commonly used within a qualitative research strategy rather than a quantitative one, due to fewer concerns about external validity and the generalisability of the findings (Bryman and Cramer, 2012).

Purposive sampling (also known as *judgmental sampling*) is where the researcher uses their judgement to select cases that will best enable them to answer their research questions (Saunders and Townsend, 2016). This kind of sampling technique is best used when there are a limited number of individuals who have the knowledge required by the researcher; and the researcher's

reasoning for choosing such a sample will depend on their research questions and objectives (Sekaran and Bougie, 2016).

Another type of non-probability sampling technique is quota sampling, which is based on the concept that the researcher's sample will represent the population as the variability in the sample for various quota variables is the same as that in the population (Saunders and Townsend, 2016). That is, a quota sample reflects the population in terms of different portions of people according to certain criteria such as demographic variables like age, gender, income, and sometimes a combination of some variables (Bryman, 2016). The selection of elements within each 'strata', however, is non-random (Lim and Ting, 2012) and is left to the researcher. It is argued by some practitioners that the quota sample is almost as good as a probability sample (Bryman, 2016).

However, proponents of probability sampling techniques argue that even though the sample may reflect the population in terms of characteristics, the fact that the interviewer gets to choose who to interview makes the sample biased, and therefore imposes limitations to generalisability. Nevertheless, with the difficulty of gaining a sample frame with the advantages of quota sampling to be less costly and easily employed and managed, this type of sampling technique is used. **Purposive sampling** is the most appropriate form of sampling technique to select this study's sample; where the researcher relied on her own judgment when choosing members of the population to participate in their study. However, this judgement was informed by the literature reviewed. For instance, prior studies in WTS research have found that water-pipe tobacco smoking rates within young adults are at their highest when compared with other age groups (Hoek *et al.*, 2011).Moreover, young adults (ages 18-30) make up a great percentage in Egypt's population, counting for almost one-third of the population (CAPMAS, 2016). Research in water-pipe tobacco smoking also outlines a difference in WTS rates with males and females, especially in the EMR. Research findings suggests that WTS is more popular among women (Tamim *et al.*, 2003) and is alleged to be more acceptable than cigarettes (Dar-Odeh and Abu-Hammad, 2011; Maziak, 2011). A stimulating debate about gender is outlined in a study by Afifi *et al.* (2013) where they explored the social norms and attitudes that lead to water-pipe being a more acceptable form of tobacco smoking for women than cigarettes in the EMR.

As such, the target population of this study is young adult Egyptian smokers of water-pipes (shisha) from the ages of 18-30 years, who are residents of the governorates of Cairo and

Alexandria. Both governorates are the two largest Metropolitan cities by population and female water-pipe tobacco smoking is relatively more publicly present (CAPMAS, 2016). Acquiring a sampling frame for this current research is also quite unmanageable, especially with lack of available and suitable data that can be used to carry out this research.

It is important to note that the statistics used in this study were the only available and updated statistics from the Central Agency for Public Mobilization and Statistics (CAPMAS, 2016) in Egypt in 2016. This study used the available statistics to develop a quota that was intended to make sure that the sample was as representative of the populations of Cairo and Alexandria as possible, using a sample validation table that is presented in *Appendix A* as a guideline for sample control. Strata and their proportions (according to age, gender and governorate) were first identified as they are represented in the population. Four separate sections are represented in a table that is outlined in *Appendix A*. The first section outlines Egypt's entire population and identifies the populations of Cairo and Alexandria as a whole and the numbers of males and females present in each governorate. Out of the populations of Cairo and Alexandria, the second table illustrates the population of males and females presented in each governorate from the ages of 18-35.

In this investigation, the size of the sample selected was important in order to establish representativeness of the sample for generalisability. Roscoe (1975) confirmed that, "sample sizes larger than 30 and less than 500 were appropriate for most research". Also, one of the strategies adopted is that a research sample size should be 400 based on the sample size consistent with the 95% confidence level (Saunders and Townsend, 2016).

In addition, the researcher uses the structural equation modelling as a relevant technique for describing the relationships between the research constructs and empirically tests the research hypotheses assigned for this research. This type of analysis takes into account five considerations that specify the sample size, and these include: (1) normality of data, missing data, model complexity, estimation technique and average error variance among reflective indicators (Hair, Black, Babin and Anderson, 2014).

The conceptual model is considered relatively complex as it includes nine main constructs that are assigned for testing, and they include: Parental Influence, Religiosity, Peer Influence,

Conservation, Openness to Change, Attitude, Perceived Behavioural Control, Subjective Norms and Intention. Hence, in order to achieve model stability and better results, a sample size of 500 respondents from the population of study was determined as the adequate sample size for different methods used to determine the sample size and to have the chance to exclude respondents with invalid responses – if any – for this research.

In this context, it is claimed that the unit of analysis is defined as the degree of accumulation of the data collected during the stage of data analysis. Study proposed questions determine the appropriate unit of analysis (Saunders and Townsend, 2016). Unit of analysis should be identified in alignment with the formulation of the research questions (Sekaran and Bougie, 2016). In this research, water-pipe tobacco smokers in Egypt are considered the relevant unit of analysis. The following section describes the research variables validation using preliminary focus groups.

4.5.2 Research Variables Validation

After defining the sampling technique and the unit of analysis, the study held preliminary focus groups as a method to validate the research variables and pre-testing the scales that are to be used in the questionnaire. As discussed earlier, the variables under study were chosen after reviewing prior literature and identified the variables in Table 4-1 as the factors that influence water-pipe smokers' attitudes and intentions towards WTS. Each variable was discussed in the focus group using a set of questions that were developed in order to establish its importance to the participants of the focus group. Variables such as personal values contained four subsets of values, out of which two were the focus of the study. However, focus groups were used to confirm this choice and validate the scales that will be used to construct the questionnaire, which is the data collection method employed in this study.

Table 4-1 illustrates the conceptual definitions of the variables in this study. The scales used to measure these variables were modified according to the nature of WTS, the comments made by the participants and the Egyptian culture for adaptation (see Table 4-3 for operational definitions).

Table 4-1: Conceptual Definitions of Research Variables

Variable	Conceptual Definition
Personal Values	"trans-situational goals, varying in importance, that serve as guiding principles in the life of a person or group" (Schwartz 1994, p.21)
Parental Influence	"Represents the quality of communication about smoking between parent and adolescent" (Harakeh *et al*., 2005, p.864)
Peer Influence	"the process through which individuals are exposed to definitions favourable/unfavourable to illegal/deviant behaviour **through their peers**" (Cochran *et al.*, 2017, p.3)
Fear of Negative Evaluation	"The apprehension an individual might have toward negative evaluation, the distress he/she might experience from those negative evaluations, the tendency to avoid situations that might entail those negative evaluations, and the expectations that others would evaluate him/her negatively" (Watson and Friend, 1969, p.449)
Attitude Towards WTS	"attitude towards the behaviour refers to the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question" (Ajzen, 1991, p.188)
Perceived Behavioural Control	"Refers to the perceived ease or difficulty of performing the behaviour and it is assumed to reflect past experience as well as anticipated impediments and obstacles" (Ajzen, 1991, p.188)
Subjective Norms	"Refers to the perceived social pressure to perform or not to perform the behaviour" (Ajzen, 1991, p.188)
Intention to WTS	"Intentions are indications of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behaviour" (Ajzen, 1991, p.181)
Religiosity	"Strong religious feeling or belief" (Hoge, 1972, p.369) "Religious motives that fall under intrinsic and extrinsic orientations" (Allport and Ross, 1967, p.434)

Researchers have identified three basic uses for focus groups: as a *self-contained method* in studies where they are considered the primary source of data; as a *supplementary source* of data in studies that depend on other primary technique such as surveys and finally, they are used in *multi method* in studies that used two or more data collection methods in which no one main method determines the use of the others (Morgan, 1997). This study conducted three different focus groups in order to confirm the relevance of the chosen variables in the model and test the scales that will be used in the development of the questionnaire in terms of language and applicability in the social context.

Prior studies stated that focus groups are useful in adapting and developing models and surveys in different environment settings (Bryman, 2016; Saunders and Townsend, 2016). As mentioned earlier, this study used this method in order to gain a clearer focus on the main focal variables of the investigation, and allow testing and restructuring of the scales that are predeveloped without implementing an interpretivist approach. For example, when reviewing prior literature, the refined theory of basic values of Schwartz (1992) incorporates 19 basic values that are recognised in all cultures. Thus, the researcher sought to recognise the central values that are found among young Egyptian water-pipe tobacco smokers. The focus groups were steered with a planned guide, containing questions to be asked to the participants, where questions are shown in *Appendix B.*

Figure 4-3 shows steps within the focus group that the researcher used for validation under this study. Those steps are briefly described in the figure and are: *Define, Determine, Develop, Review, Recruit, Conduct, Analyse and Develop.*

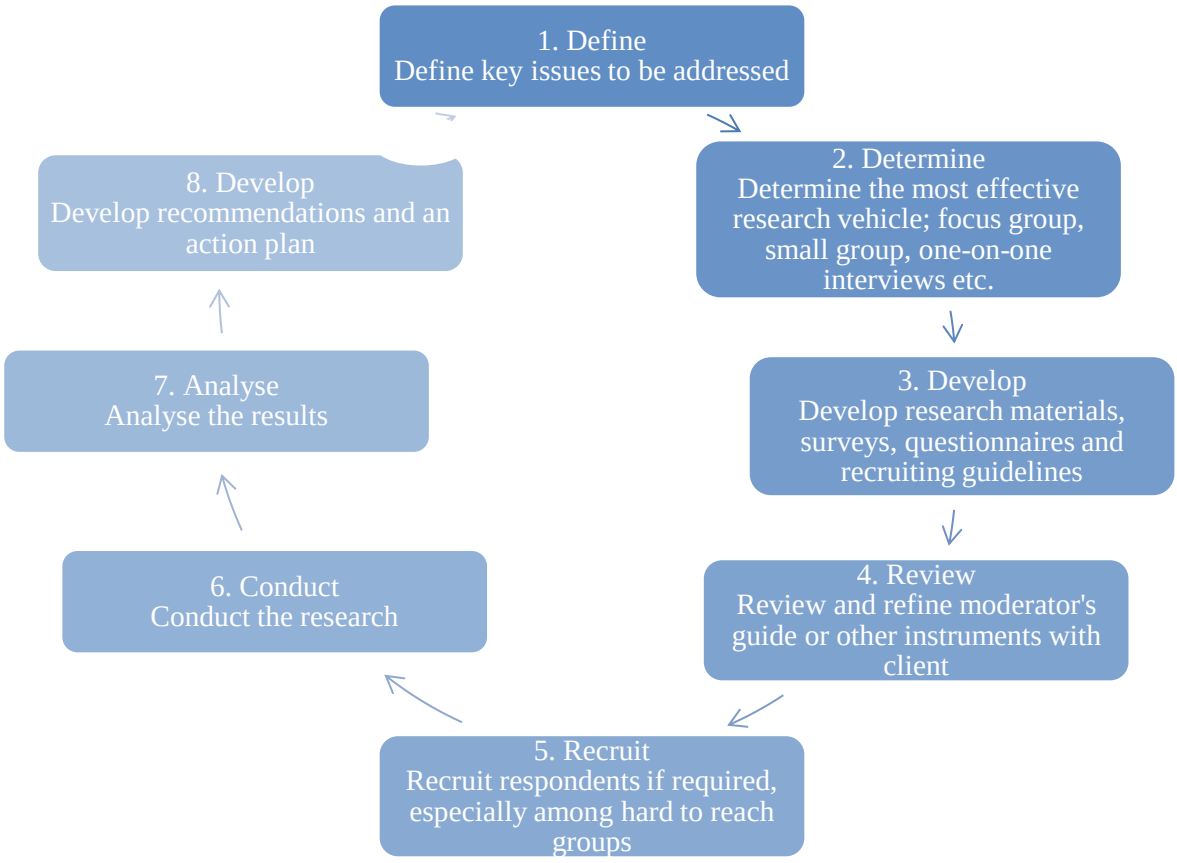

Figure 4-3: Focus Group process

Ethical issues were a main concern for the study. Before any of the participants took part in the study, the interviewer gave a brief description about the investigation. The participants were informed about what was expected of them; it was emphasised that the involvement was voluntary (the person can withdraw at any time with no negative consequences); the average duration of the focus group (30 to 45 minutes) was declared; and significance of confidentiality was outlined. This information was verbally discussed in a manner that was comprehensible to the participants. Later, the researcher made each participant sign a consent form (*see Appendix C*), declaring their willingness to participate in the study. These procedures were inspired by Gray (2013) and Patton (2003).

The interviewer conducted a female focus group, a male focus group, and a mixed gender focus group, in order to gain diverse opinions from both genders. Each focus group included eight participants. Barbour (2007) stated that eight participants are suitable for most studies of different purposes. The members in the focus groups were selected using a *purposive sampling technique*. The participants chosen in this study were: young Egyptian adults, ages 18-30, who are current smokers of shisha. It was believed that these participants have the needed information to aid in confirming the variables in this study. Table 4-2 illustrates the participants in the focus groups.

Table 4-2: Focus Group Participants

Focus Group	Age		Gender	
Focus Group One Female	18-21 22-25 26-30	2 2 4	Female Male	8 0
Focus Group Two Male	18-21 22-25 26-30	4 3 1	Female Male	0 8
Focus Group Three Mix	18-21 22-25 26-30	3 3 2	Female Male	4 4

Once the focus groups were conducted, the interviewer analysed the data manually. From the transcribed conversations, the interviewer identified common ideas that emerged from the participants. Results indicated that smoking shisha is a popular activity done among young Egyptian adults. It is one of the most interesting social activities. For some, smoking shisha is an occasional fun indulgence, while for others it is a daily relaxing and routine activity that is part

of their culture. The participants acknowledge that most of the people they know smoke shisha, family and friends. It is no longer a male dominant activity; many females smoke publicly. When asked about Schwartz's *et al.*, (2012) refined basic values theory, the participants frequently mentioned values related to: Openness to Change (Self Direction, Stimulation and Hedonism) and Conservation (Conformity, Tradition and Security). When it comes to religion views, participants believe that there are more things that exist which are harmful – more than shisha, but knew that anything harmful to the body was considered frowned upon or *makruh* by all religions. However, more men than women were concerned with how others judge their smoking behaviour. Men only seemed to be concerned with how their parents would react to their water-pipe smoking behaviour. Some of the concepts outlined for each construct during the focus group are illustrated in *Appendix D*. Based on these conclusions, the model was established and ready to be further tested. Some scales were also modified based on the comments of the participants, as will be further illustrated in the next subsection.

4.5.3 Questionnaire Design

After defining the research variables using the previous studies relevant to the research problem and the preliminary focus groups assigned in this research, the research variables were operationalised. The questionnaire is one of the most popular instruments used for gathering the appropriate information needed from people (Olsen and St George, 2004). The structured questionnaire includes pre-coded and well-defined closed ended questions. These questionnaires are easy to be administered, consistent in answers, and easy for data management. The unstructured questionnaire contains open ended and vague opinion-type questions. This type of questionnaire is frequently adopted with focus group studies. In quasi-structured questionnaires, the investigator can use structured questions mixed with some unstructured questions.

Thus, this study uses structured questionnaire that includes closed ended questions to obtain the quantitative data from water-pipe tobacco smokers in Egypt. A questionnaire is applied to confirm some factors and answer the proposed researchable question of this study. The administrated survey was the method used. Questionnaires are vital tools of data collecting, specifically in the case when there are a large number of people to reach in separate geographical areas. They are a popular method to collect data due to the easiness in which researchers fairly obtain responses and, also the ease of coding the results (Sekaran and Bougie, 2016).

The scales used to measure each construct under study were chosen through a rigorous selection process. In order to operationalize the constructs, the first step was to conceptually define them in light of the study. As such, each construct was clearly defined in Table 4-1 in order to understand how to measure them. For example, in this study, the construct "Parental Influence" represented "the quality of communication about smoking between parent and adolescent" (Harakeh *et al.,* 2005, p.864). Therefore, when operationalizing the construct, a measurement for parent-youth quality of communication was used.

The second step was to find suitable measurements for the constructs under study. For each variable, the most widely used measurements were selected and compared against each other in terms of date, reliability and validity, citations, and its various adaptations across its use. Table 4-3 outlines the various scales that were considered for the questionnaire design. Some scales were chosen from their original scales of the theory used, such as Schwartz *et al.,* (2012). In the case of religiosity, two main measurements were taken into consideration: Hoge (1972) and Koenig, Meador and Parkerson (1997). However, the DUREL scale by Koenig, Meador and Parkerson (1997) was found unsuitable because some of the items did not accurately measure religiosity within Muslim practices. For example, one of the items measured religiosity in terms of attending church or other religious meetings. In the case of Muslim practices, mosque attendance is not considered a religious obligation in comparison to church attendance among Christians. Moreover, Hoge's (1972) scale was found to be more general and fitting to measure religiosity among both Muslim and Christian respondents. As such, it was chosen. Other scales were found to be clearly addressing the research objective of this study and were adapted from smoking-specific studies and studies of deviant behaviours. Although adapted from the original scales of Ajzen (1991), measurements of Attitudes towards WTS, Intentions to Smoke, Subjective Norms, and PBC were chosen from smoking specific and deviant behaviours studies; e.g. Harakeh *et al.,* (2005) and Cochran *et al. (*2017). The FNE scale that is originally designed by Watson and Friend (1969) was chosen for its brief and more commonly used version that is designed by Leary (1983). According to the conceptual definitions of Peer and Parental Influence, the scales were chosen accordingly. As discussed in the earlier paragraph, parental influence was conceptualized in terms of the quality of communication with their youth. Hence, youth-parent communication scales were considered in the study, but Harakeh's *et al.* (1995) smoking specific scale was found to adequately measure the construct. Various scales were also

considered for the measurement of Peer Influence, where Cochran *et al.* (2017) peer influence scale that is adapted from Akers (1998) social learning theory effectively measured the conceptual definition of peer influence in this study.

A detailed description of the operational definitions of the variables is illustrated in Table 4-4; where the adaptations done for every scale is explained. As will be further clarified, the adaptations were done in order for the questions to be more clear and easy for the respondent to answer.

Table 4- 3: Measurement Selection

Construct	**Measurements that were considered for instrument design**	**Scale used for measurement**
Personal Values	Schwartz *et al.* (2012)	Schwartz *et al.* (2012)
Parental Influence	Small and Kerns (1993) Harakeh *et al*. (2005) Barnes and Olsen(1982)	Harakeh *et al*. (2005)
Peer Influence	Werner-Wilson and Arbel (2000) Armsden and Greenberg (1987) Cochran *et al.* (2017) Akers (1998)	Cochran *et al.* (2017) and Akers (1998)
Fear of Negative Evaluation	Leary (1983) (Brief FNE scale) Watson and Friend (1969)	Leary (1983) (Brief FNE scale) Watson and Friend (1969)
Attitude Towards WTS	Ajzen (1991) Dijkstra, Sweeney and Gebhardt, (2001)	Ajzen (1991) and Dijkstra, Sweeney and Gebhardt, (2001)
Subjective Norms	Ajzen (1991) De Vries *et al.* (1995) Cochran *et al.* (2017)	Ajzen (1991) De Vries *et al.* (1995) and Cochran *et al.* (2017)

Construct	Measurements that were considered for instrument design	Scale used for measurement
Perceived Behavioural Control	Athamneh *et al.* (2017) and Ajzen (1991)	Athamneh *et al.* (2017) and Ajzen (1991)
Intention to WTS	De Vries, Dijkstra, and Kuhlman (1988) Ajzen (1991)	De Vries, Dijkstra, and Kuhlman (1988) and Ajzen (1991)
Religiosity	Hoge Intrinsic Religiosity Scale (Hoge, 1972) The Duke University Religion Index (DUREL) (Koenig, Meador and Parkerson,1997)	Hoge (1972)

Regarding Personal Values, nine values are measured using a 27 item, 5-point scale, from "*Not like me at all*" to "*Very much like me*". These values are mainly; **Openness to Change** (Self Direction – thought and action, and Stimulation and Hedonism) and **Conservation** (Conformity – interpersonal and rules, and Tradition, and Security – Societal and Personal). Questions for this section are adapted from the study of Schwartz *et al.* (2012), where the original scale was a 6-point scale but was modified to 5 points in order for the questionnaire to be harmonised. The original scale had a female and a male version. However, the items were modified to describe some 'people' (using the term 'them') to avoid any gender discrimination. The term "tactful" was modified to "considerate" as respondents did not understand it during the pilot study.

Regarding the second variable, Parental Influence, it was measured using a six item, 5-point scale from 1 "Completely not true" to 5 "Completely true". Questions are adapted from the study of Harakeh *et al.* (2005), where the scale was applied twice, one time for the mothers and one time for the fathers, as prior researcher suggests that communication is different between young adults and their fathers and mothers (Harakeh *et al.*, 2005). Participants from the focus group and from the pilot study also supported this and suggested that the scales are applied once for fathers

and once for mothers. The word “smoking” was replaced with “shisha smoking” so it can be relevant to water-pipe tobacco smoking.

Peer Influence was measured using a 3 item, 4-point scale from “none” to “all or almost all”. Questions are adapted from the study of Cochran *et al*. (2017), where the scale was originally a 4-point scale but was modified into a 5-point scale in order for the questionnaire to be harmonised. The word “smoking” was replaced with “shisha smoking” so it can be relevant to water-pipe tobacco smoking.

The FNE scale included a 12 item, 5-point scale, from “Not at all characteristic of me” to “Extremely characteristic of me”. Questions are adapted from the study of Leary (1983) and Watson and Friend (1969), where the pilot study undertaken revealed that people did not understand the word “characteristic” so it was modified to “like”.

Religiosity was measured using the Intrinsic Religious Motivation Scale (IRMS). The IRMS has 10 items in the form of statements and is measured on a 5-point scale ranging from 1 (not at all true) to 5 (exactly true). Of the 10 items, seven are for intrinsic religiosity and three are for extrinsic religiosity. Questions were adapted from Hoge (1972), where the statement “Beliefs are less important than living a moral life” confused most of the respondents during the pilot study and was modified to “it does not matter so much what I believe as long as I lead a moral life”, and it was adapted from Liu and Koenig (2013).

Regarding the TPB variables, attitudes towards WTS was measured using a 7 item, 7-point semantic differential. Questions were adapted from Ajzen (1991), Dijkstra, Sweeney and Gebhardt, (2001) and Van de Ven *et al.* (2007), where the word “smoking” was replaced with “shisha smoking” so that it can be relevant to WTS. Subjective norms were measured using a 5-point, 4 item scale ranging from “Strongly Disapprove” to “Strongly Approve”. Questions were adapted from Ajzen (1991) and Cochran *et al*. (2017)**.** Regarding PBC, the questions were adapted from Ajzen (1991) and Athamneh *et al.* (2017), where the two items found were combined in one scale that is 5 point, ranging from 1 “extremely unlikely” to 5 “extremely likely”. Finally, the intention to smoke used a 5 item, 7-point scale, from “Definitely not” to “Definitely yes”. Questions were adapted from De Vries, Dijkstra, and Kuhlman (1988) and Ajzen (1991).

The data collection for the questionnaire was during the summer of 2017 (June, July, and August). The respondents were chosen subjectively from within each city. Young people were mainly selected at coffee shops and *Ahwa* (local coffee shop) where eligible respondents were smoking their shisha. The interviewer visited these sites in which the target population naturally consume and enjoy their shisha sessions. Organizational informed consent forms were signed by the managers/owners of these sites for consent to collect data. These consent forms are found in *Appendix E*. The data collection was conducted between the hours of 5:00 pm and 10:00 pm, Sundays through Thursday; and on Friday and Saturday between the hours of 3:00 pm and 11:00 pm. These timings were chosen because ideally these are the times where shisha smokers would start their smoking sessions.

The respondents were approached and asked if they were willing to participate in a PhD research study. Those who agreed were given a brief description of the survey process. The respondents were given a questionnaire on the spot and asked to hand it over when they are done. The interviewer would step away from the respondent, giving them the space and time needed to fill out their questionnaire. This approach allowed minimum interference with the participants while answering the questions. Respondents were given incentives in the form of 50 Egyptian pounds off their coffee receipts. The questionnaire was handed out to around 500 smokers, while a number of 402 responses were found suitable for analysis, after deleting questionnaires with missing values as well as outliers.

The questionnaire was initially developed in English, then translated to Arabic and translated back to English. The English Language Institute at the Arab Academy for Science, Technology and Maritime Transport in Alexandria and a freelance translator performed the translations. To have a second opinion, the two versions of the English questionnaire were then examined by two academics that approved that both questionnaires had the same meaning. The Arabic version of the questionnaire was examined by an Arabic teacher to confirm the precision of translation. The questionnaire was pre-tested by administering it to 50 respondents in a variety of places including the Arab Academy for Science, Technology and Maritime Transport and Alexandria Sporting Club to pilot test it for clarity, comprehension and consistency. As a result of this test, several questions were re-worded and re-structured.

The questionnaire was also thought to be too long (around eight pages) and some formatting techniques were used to make the questionnaire look clearer and shorter. The final English version of the questionnaire was six pages long, while the Arabic version of the questionnaire constituted five pages. The final forms of both questionnaires are found in *Appendix F and Appendix G*. The survey included all the relevant measurements in order to help answer the study's research questions and the proposed conceptual framework. The questionnaire was based on operational statements that measured each of the variables. Each variable and its instruments were well defined. The survey contained several sections.

The questionnaire starts with a short paragraph that explains to the participants the reason for and importance of the research and how by participating in the research they will be helping out the researcher in her PhD. This introduction also declared and assured the respondents of anonymity/confidentiality of information. It was also outlined in a bold format that the respondents have to be above 18 years of age to participate in this study as this is the legal age of smoking in Egypt. The survey began with nine nominal introductory questions that surveyed and examined the participants' smoking habits. The following questions were: *How many times have you smoked shisha in your entire life? How frequently do you currently smoke shisha? How long have you smoked shisha at this frequency? How old were you when you first smoked shisha, or even tried a puff? Do your parents smoke shisha? Do your parents know that you smoke shisha? Do you currently smoke cigarettes? Do you consider yourself "hooked" on smoking shisha?*

These introductory questions were adapted from a "Hookah Questionnaire" that was constructed by Heinz *et al.* (2013) and is originally composed of 43 items that were adapted from peer-reviewed studies of shisha smoking and/or altered from cigarette and hookah smoking measures (Akl *et al.*, 2010; Smith-Simone *et al.*, 2008). The next part of the questionnaire focused on and measured the research variables found in the proposed conceptual framework. The inquiries were related to the personal values, socialisation agents (parental communication and friends), subjective norms, religiosity, FNE, the respondents' attitude towards WTS, PBC and intentions to smoke water-pipes. Furthermore, the questions were developed for the illustration and evaluation concerning the impact of water-pipe tobacco smokers' attitudes and their intentions to smoke. All the assessed variables in this section used interval scales, either the semantic differential or Likert type scale.

Specific instructions and brief demonstrations on how to respond to the various scales were given to help the respondents answer the section without difficulties (the operationalisation of the variables was discussed for each investigated dimension). In addition, the purpose of each question was carefully indicated. The information and questions were aligned in a way that allowed the respondents to complete the task of reading and answering the questionnaire by applying the least time and effort. The final section in the survey asked about additional information regarding the respondents' personal information (socio-demographic). This section in the survey asked about the respondents' age, highest completed level of education, gender, marital status, number of children, city of residence, religion, current job status, and finally the average monthly household income in Egyptian pounds.

Table 4-4: Operational Definition of Variables

Variable	Scale used for measurement	Source
Personal Values	Nine values will be measured using a 27 item, 5-point scale, from "*Not like me at all*" to "*Very much like me*" MAINLY: **Openness to Change** (Self Direction – thought and action, and Stimulation) Hedonism, and **Conservation** (Conformity – interpersonal and rules, and Tradition, and Security – Societal and Personal) 1. Being creative is important to them. 2. It is important to them to form their own opinions and have original ideas. 3. Learning things for themselves and improving their abilities is important to them. 4. It is important to them to make their own decisions about their life. 5. Doing everything independently is important to them. 6. Freedom to choose what they do is important to them. 7. They are always looking for different kinds of things to do. 8. Excitement in life is important to them. 9. They think it is important to have all sorts of new experiences. 10. Having a good time is important to them. 11. Enjoying life's pleasures is important to them. 12. They take advantage of every opportunity to have fun. 13. They avoid anything that might endanger their safety. 14. Their personal security is extremely important to them. 15. It is important to them to live in secure surroundings. 16. It is important to them that their country protects itself against all threats. 17. They want the state to be strong so it can defend its citizens. 18. Having order and stability in society is important to them. 19. It is important to them to maintain traditional values or beliefs. 20. Following their family's customs or the customs of a religion is important to them. 21. They strongly value the traditional practices of their culture.	Schwartz *et al.* (2012)

Variable	Scale used for measurement	Source
	22. They believe they should always do what people in authority say. 23. It is important to them to follow rules even when no one is watching. 24. Obeying all the laws is important to them. 25. It is important to them to avoid upsetting other people. 26. They think it is important never to be annoying to anyone. 27. They always try to be considerate and avoid irritating people.	
Parental Influence	Six items, 5-point scale from 1 "Completely not true" to 5 "Completely true": 1. My mother (or father) and I are interested in each other's opinion on smoking. 2. My mother (or father) and I can easily communicate about my views on smoking. 3. Whenever my mother (or father) and I discuss smoking we both feel at ease. 4. Whenever my mother (or father) and I discuss smoking I have the feeling that she is dishonest or unreasonable. 5. Whenever my mother (or father) and I discuss smoking I feel she understands me. 6. Whenever my mother (or father) and I discuss smoking she takes me seriously.	Harakeh *et al*. (2005)
Peer Influence	Three item, 5-point scale from "none" to "all or almost all": - How many of your friends smoke shisha? 1. Friends you've know the longest 2. Friends most often associated with 3. Best friends.	Cochran *et al.* (2017) and Akers (1998)
Fear of Negative Evaluation	12 item, 5-point scale, from "Not at all characteristic of me" to "Extremely characteristic of me. 1. I worry about what other people will think of me even when I know it doesn't make any difference. 2. I am unconcerned even if I know people are forming an unfavourable impression of me. 3. I am frequently afraid of other people noticing my shortcomings. 4. I rarely worry about what kind of impression I am making on someone. 5. I am afraid others will not approve of me. 6. I am afraid that people will find fault with me. 7. Other people's opinions of me do not bother me.	Leary (1983) (Brief FNE scale) Watson and Friend (1969)

Variable	Scale used for measurement	Source
	8. When I am talking to someone, I worry about what they may be thinking about me. 9. I am usually worried about what kind of impression I make. 10. If I know someone is judging me, it has little effect on me. 11. Sometimes I think I am too concerned with what other people think of me. 12. I often worry that I will say or do the wrong things.	
Attitude Towards WTS	Seven item, 7-point semantic differential I think daily smoking is… 1. Unpleasant (1) to pleasant (7) 2. Harmful (1) to innocent (7) 3. Useless (1) to useful (7) 4. Boring (1) to exciting (7) 5. Hazardous (1) to harmless (7) 6. Unhealthy (1) to healthy (7) 7. Bad (1) to good (7)	Ajzen (1991) and Dijkstra, Sweeney and Gebhardt, (2001)
Subjective Norms	5 points, 4 items scale from 1 "Strongly Disapprove" to "Strongly Approve". - To what degree would the following significant others approve/disapprove you smoking shisha? 1. Mother 2. Father 3. Friends 4. Best friend	Ajzen (1991) De Vries *et al.* (1995) and Cochran *et al.* (2017)
Perceived Behavioural Control	Two items, 5-point scale ranging from 1 "extremely unlikely" to 5 "extremely likely": 1. I expect that I will have enough determination in the future to quit shisha smoking 2. Having strong determination will enable me to quit shisha smoking	Athamneh *et al.* (2017) and Ajzen (1991)

Variable	Scale used for measurement	Source
Intention to WTS	Five items, 7-point scale, from "Definitely not" to "Definitely yes" 1. Do you intend to smoke (or continue to smoke) ever? 2. Do you intend to smoke with friends? 3. Do you intend to smoke with your parents? 4. Do you intend to smoke within 6 months? 5. Do you intend to smoke within 2 years?	De Vries, Dijkstra, and Kuhlman (1988) and Ajzen (1991)
Religiosity	Intrinsic Religious Motivation Scale (IRMS): 10 item, 5-point scale ranging from 1 (not at all true) to 5 (exactly true). Of the 10 items, seven are for intrinsic religiosity and three are for extrinsic religiosity. 1. My faith involves all of my life. 2. Beliefs are less important than living a moral life. 3. One should seek God's guidance when making important decisions. 4. In my life, I experience the presence of the Divine (God). 5. Refuse to let religion influence everyday affairs. 6. Faith sometimes restricts my actions. 7. Nothing is as important as serving God. 8. Many more important things in life than religion. 9. Religious beliefs lie behind my whole approach to life. 10. Try hard to carry religion over into life's dealings.	Hoge (1972)

The following section explains how data was considered in collection and observations are treated to test the proposed framework.

4.6 Research Time Horizon

Time horizon is composed of three types; cross-sectional, longitudinal studies and pooled data. The purpose of these types is to collect data that would be pertinent to finding the answer to a research question. **Cross-Sectional Studies:** Data for this study are collected just once, perhaps over a period of days/weeks/months, in order to tackle a research question. Data collection at one point in time was sufficient. **Longitudinal Studies:** In some cases, the research question under study might guide the researcher into studying individuals or phenomena more than once over a period of time (Bryman and Bell, 2015).

This research is a cross sectional study, where data is gathered over one period of time, and this is due to time and cost constraints.

4.7 Data Analysis Techniques

The data collected shall be analysed using the IBM SPSS Statistics program (Version 24) and AMOS (Version 24) – for structural equation modelling – to perform a set of advanced statistical analysis in order to answer the research questions and to verify the research hypotheses. The statistical tests included the following steps as illustrated in Figure 4-4.

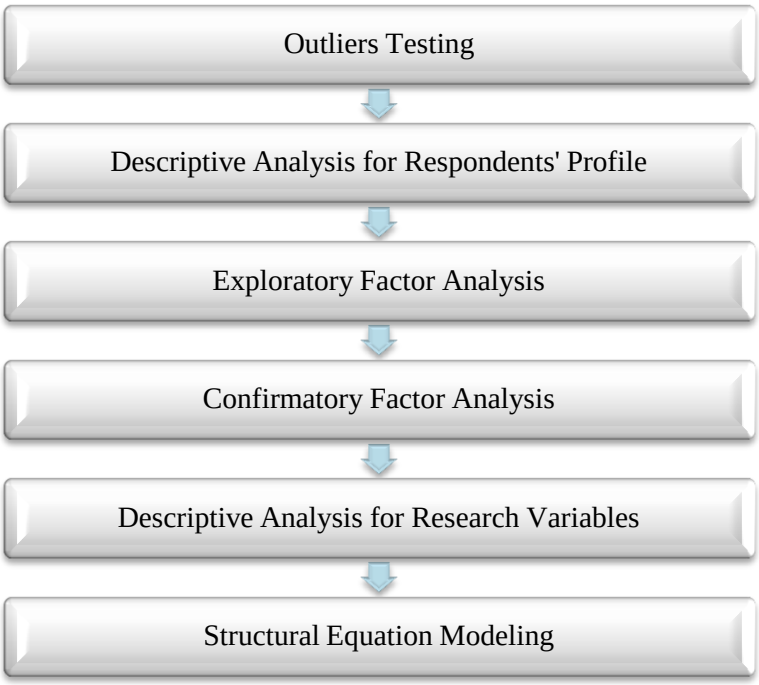

Figure 4-4: Data Analysis Process

4.7.1 Outliers Testing

The outliers are tested as a matter of the data cleaning process for the data collected for the research purpose. As the sample size was large enough, the observations defined to include outliers were deleted and ignored from the sample under study. Thus, a total number of 402 observations were considered after deleting discarding observations with outliers.

4.7.2 Descriptive Analysis for Respondents' Personal Profiles

Descriptive analysis is introduced in the form of ***Frequency analysis***, which shows the percentage of the occurrences of various answers that arose for the research variables in the introductory questions, as well as the respondents' socio-demographic characteristics.

4.7.3 Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) refers to the process of using the factor analysis technique in identifying the model constructs. The aim of this analysis is to outline the basic structures among the variables under research using the factor loadings of items forming a certain construct (Hair *et al.*, 2014). By doing so, the investigator can "manage" the items in the analysis- grouping

them, labelling them, identify if some overlap or weak loadings happen, and so forth. This is considered as a step in the process that helps the researcher in introducing the research constructs with valid and reliable data. A model is considered as an identified model if an acceptable loading of 0.4 or more is obtained for each item belonging to a certain factor after deleting those items having weak loadings or causing cross loadings between different items. The remaining items of each construct are considered as the items that could well identify this construct.

4.7.4 Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) is another step in the process that helps the investigator identifying constructs with valid and reliable data. CFA also depends on factor analysis technique to identify the measurement model using the common method bias, covariance method and data testing, as shown in the following sub sections.

Common Method Bias is a method of CFA through which a common factor is identified with common variance for all items observed to have adequate loadings by EFA. If the items observed are discriminant and unique for only the factors they were designed for, their common variance computed for the common factor becomes weak and vice-versa. A weak common variance is identified if its value is less than 50%.

Covariance Method is another method of CFA through which the researcher draws the covariances between the constructs identified in the EFA stage and compute the model fit for the model obtained using covariances. A model is well-identified if it could well explains the data using an acceptable model fit. The model fit is considered as an acceptable one if all indicators are within the threshold values determined by Kline (2011) and Hair *et al.*, (2016). Table 4-5 displays the model fit indicators of CFA, which are the minimum discrepancy (CMIN), goodness of fit index (GFI), comparative fit index (CFI), incremental fit index (IFI), Tucker-Lewis index (TLI), and root mean square of approximation (RMSEA).

Table 4-5: SEM Fit Measures

Measure	Threshold
Chi-square/df (cmin/df)	< 3 good; < 5 sometimes permissible
p-value for the model	< 0.05
NFI	> 0.90
TLI	> 0.95
IFI	> 0.95
CFI	> 0.95 great; > 0.90 traditional; > 0.80 sometimes permissible
RMSEA	< 0.05 good; 0.05-0.10 moderate; > 0.10 bad
PCLOSE	> 0.05

Source: Hair et al., (2016)

Data Testing includes testing data for validity and reliability, which have to be proved to show that the data collected is good for testing the research hypotheses.

Validity is described as the degree to which the statements assigned for a certain construct in the questionnaire can measure this construct in a proper way (Sekaran and Bougie, 2016). To measure validity, factor analysis technique is used to compute the average variance extracted (AVE) and factor loading (FL). AVE is used to measure the factor validity, which represents the average community for each latent factor. It is claimed that it should be greater than 0.5 to refer to an adequate validity (Hair, Sarstedt, Ringle and Mena, 2012). Also, FL is the size of the loadings of items on their corresponding variable, which is claimed to be at least 0.40 to refer to an adequate validity (Sekaran and Bougie, 2016).

Reliability analysis (Cronbach's Alpha) refers to the consistency of the statements given to measure one construct in the questionnaire designed for this research. Reliability analysis is conducted for each construct using the statements assigned for this construct by computing the Cronbach's alpha value. This value is considered as the most commonly used test of reliability. The range of Alpha coefficient comes between 0 and 1, the higher the score the higher the reliability. The adequate reliability should be indicated by Alpha coefficients exceeding 0.7 (Hair *et al.*, 2012; Tavakol and Dennick, 2011).

After conducting the steps above, the SEM model is ready to be tested using the model specified through the EFA and CFA techniques. The SEM model could help with testing the relationships assigned in the current research to figure out a response to the research hypotheses predefined by

the research using recent studies discussed in the previous chapters. A preliminary step to conducting the SEM model is to describe the research variables and verify some assumptions (Normality and Multicollinearity) as shown in the following sections.

4.7.5 Descriptive Analysis for Research Variables

After computing the research variables according to the validity and reliability examined in the previous sub section, the researcher is able to compute some descriptive statistics, like:

Frequency analysis – It shall be used to calculate the percentage of the occurrences of various answers that arose for the research variables.

Additional Descriptive Statistics (mean median, mode, range and standard deviation) – It shall be used to identify the average answers of the respondents using a variety of methods; recognise the answer value that occurred most frequently; and offer an indicator of the spread of the data distribution.

4.7.6 Assumption Verification

It is argued that the research variables are assumed to be normally distributed to be able to run the SEM. The normal distribution for the research variables means that the data could be plotted in a bell-shaped distribution where there is no skewness (heavy tail to the right or to the left) nor kurtosis (the bell-shape is relatively steep or flattened) in the data. Normality is verified by the Kolmogrov-Smirnov test, where a P-value higher than 0.05 refers to a normal distribution for the data. It could be also verified using the informal test of computing the skewness and kurtosis values. Skewness and Kurtosis values within ±1 are considered to be acceptable for approximate normality (Kleinbaum, Kupper, Nizam and Muller, 1988).

In addition, the multicollinearity problem should be checked for the independent variables included in the research model. Multicollinearity represents a high correlation between the independent variables, which might cause redundancy in the information included in the model and variables might appear as insignificant, while they were significant. The problem of multicollinearity is examined by computing the variance inflation factor (VIF). AVIF greater than or equal 5 indicates that a problem of multicollinearity exists (Hair, Black, Babin and Anderson, 2014).

4.7.7 Structural Equation Modelling for Hypotheses Testing

Structural equation modelling (SEM) is a statistical methodology used in many scientific researches of various fields such as social and behavioural sciences as well as marketing and medical research (Raykov and Marcoulides, 2006). Such interest in using SEM in numerous fields of research is because of the ability of SEM to provide researchers with an inclusive method for measuring and testing substantive theories. These theories are assessed through testing hypothetical assumptions about the relationships and potential interrelationships between vairables (Byrne, 2016; Raykov and Marcoulides, 2006).

In the SEM model, the researcher draws the model with the constructs and items pre-specified in the measurement model. The arrows in the model are directed according to the relationships hypothesized in the research framework and the SEM model is conducted accordingly, where the parameter estimates are computed after rechecking the model fit indices obtained for the SEM model (Kline, 2011).

Bryne (2016) argued that several differences distinguish SEM from the older generation of multivariate procedures: (1) it takes more of a confirmatory approach to data analysis rather than an exploratory one, even though other researchers propose an exploratory mode of SEM application, but with caution (Raykov and Marcoulides, 2006); (2) other multivariate analyses ignore potential measurement error, while SEM provides clear estimates of these error variance parameters, (3) SEM can measure both observed and unobserved variables (i.e. latent variables) unlike other multivariate analysis; and (4) developing and testing complex multivariable models via SEM is easily applicable and aids in studying both direct and indirect effects of variables in a given model (Raykov and Marcoulides, 2006).

In this study, a sum of various variables is researched that are deduced from theories such as the TPB, the theory of basic values, consumer socialisation and other individual level constructs such as religiosity and the fear of negative evaluation, as well as demographic variables such as gender. The conceptual model also outlines the various relationships between the variables that are to be tested through the hypotheses developed. This study finds that using SEM will help measure the direction, strength, and significance of the relationships between all variables in the structural model (both direct and indirect) and illustrate the mediating effects of the moderating

variables on the model. This multivariate analysis can also give an indication of any interrelationships present between the variables that can explain individuals' attitude formation and behaviour associated with WTS.

4.8 Ethical Concerns

Ethical concerns were taken into consideration in all stages of the research. The primary data collection of this study complied with Northumbria University's ethics regulations, and ethical approval was sought from Northumbria University's ethics committee prior to data collection. Informed consent forms for the focus groups were provided for each participant before the start of the focus group by explaining the reasons for holding the focus group, a list of the points to be discussed, how the data will be dealt with and how will it be stored and asking the participants to confirm their willingness to participate in the study and informing them about their right to withdraw at any point of the research – the form can be found in *Appendix C*. The same procedure was followed in the questionnaire design and distribution where participants were asked for their consent before filling out the questionnaires, and a description of the study with all their rights and ethical concerns was displayed at the start of the questionnaire – the questionnaires (both Arabic and English versions) can be found in *Appendix F* and *Appendix G*. Organization consent forms where also signed by café managers/owners before the start of the data collection, where they were provided a detailed description of the study, how the data will be dealt with and how will it be stored, and the incentives that will be given out. These organization consent forms can be found in *Appendix E*.

The participants in both focus groups and questionnaires were not harmed, embarrassed or annoyed by the data collection process. All data gathered was reviewed and handled in confidence, respondents remained anonymous, and all completed questionnaires and focus group transcripts and voice records were stored safely with the researcher, with only the people who are working on this research having access to the information provided.

4.9 Conclusion

In this chapter, the methodology of this research was presented. It could be concluded that the philosophical stance of this research is positivism, and the purpose of the research is descriptive

in nature. The research strategy used a deductive approach, and a quantitative method is followed where the type of investigation is achieved using reliability, validity, frequencies, descriptive analysis and structural equation modelling. The researcher interference was minimal and data was collected using administered questionnaires using a purposive sampling technique, with the use of quotas for sample representation. The eligible sample of respondents was Egyptian youth and young adults, aging 18-30, who lived in Cairo and Alexandria. The sample size was 500 respondents. Finally, the research time horizon was cross sectional.

Chapter Five

Data Analysis and Results

Chapter Five

Data Analysis and Results

5.1 Overview

After identifying the methodology choices in the previous chapter, the current chapter aims to conduct the analysis and observe the research findings to achieve the research aim and objectives. The objective was to examine the impact of personal values, socialisation agents (parental influence and peer influence), and religiosity on individuals' intention toward WTS in Egypt, data analysis is presented in this chapter to show the results of these relationships. In addition, the mediating role of attitude toward WTS between personal values, socialisation agents, and religiosity on one side and intentions to smoke on the other side is tested as had been hypothesised in the previous chapter. Moreover, the impact of PBC on intentions to smoke is examined. Moreover, the fear of negative evaluation is tested as a moderator in the relationship between attitude toward WTS and intentions to smoke. Finally, gender is tested as a moderator in the relationship between personal values, socialisation agents (parental influence and peer influence), and religiosity and attitude toward WTS.

Data analysis process starts by a descriptive analysis for the research variables. Subsequently, the data testing using exploratory and confirmatory factor analysis will be displayed. Afterwards, Structural Equation Modelling (SEM) is applied through which results and findings are observed and presented. Thus, this chapter examines the research hypotheses and analyses data in an attempt to answer the research questions. The data was coded and analysed using IBM SPSS Statistics program (Version 24) and AMOS – version 24 software package.

Therefore, the two mentioned packages are used to analyse the data under study. As a preliminary step to the data analysis, the data was checked for missing values. It was found that there were 56 respondents who did not fully answer the questionnaire administered. Therefore, they were excluded, having a remaining number of 444 observations. Also, it was found that there were 12 respondents who answered the whole questionnaire with the same answer, causing a problem of constant variance. Accordingly, these responses were excluded from the total

number of observations under study. Thus, the number included in the data analysis of this research was 432 respondents after excluding the missing and invalid responses.

This chapter is designed into several sections, where the next section tests the presence of outliers in the data under study. The third section displays the descriptive analysis for the respondents' personal profile; the fourth section presents the exploratory factor analysis, while the fifth section introduces the confirmatory factor analysis. The sixth section displays the common method bias, while the seventh section provides the descriptive analysis for the research variables. The eighth section illustrates the normality and multicollinearity assumptions that have been verified. Finally, the last sections introduce the hypotheses testing for the current research and a conclusion is provided at the end of the current chapter.

Figure 5-1 illustrates the current chapter mapping for providing the research findings and discussing the research output.

Figure 5- 1: Chapter Five Outline

5.2 Outliers Testing

All questions under study were tested for outliers. Through the tests, it was found that the data under study contained some outliers. This had been shown in several statements of the data under study. A total number of 33 responses had been identified to include outliers. Since the outliers had been shown common within the same observation for several statements, it was preferred to delete these observations from the sample under study. Thus, a total number of 402 responses had been included in the data analysis for the current research. Figure 5-2 shows the boxplot of one of the statements in the data under study (the first statement assigned for the "Intention to smoke" construct) after the outliers had been excluded, where it could be observed that the statement is almost normal after deleting the outliers.

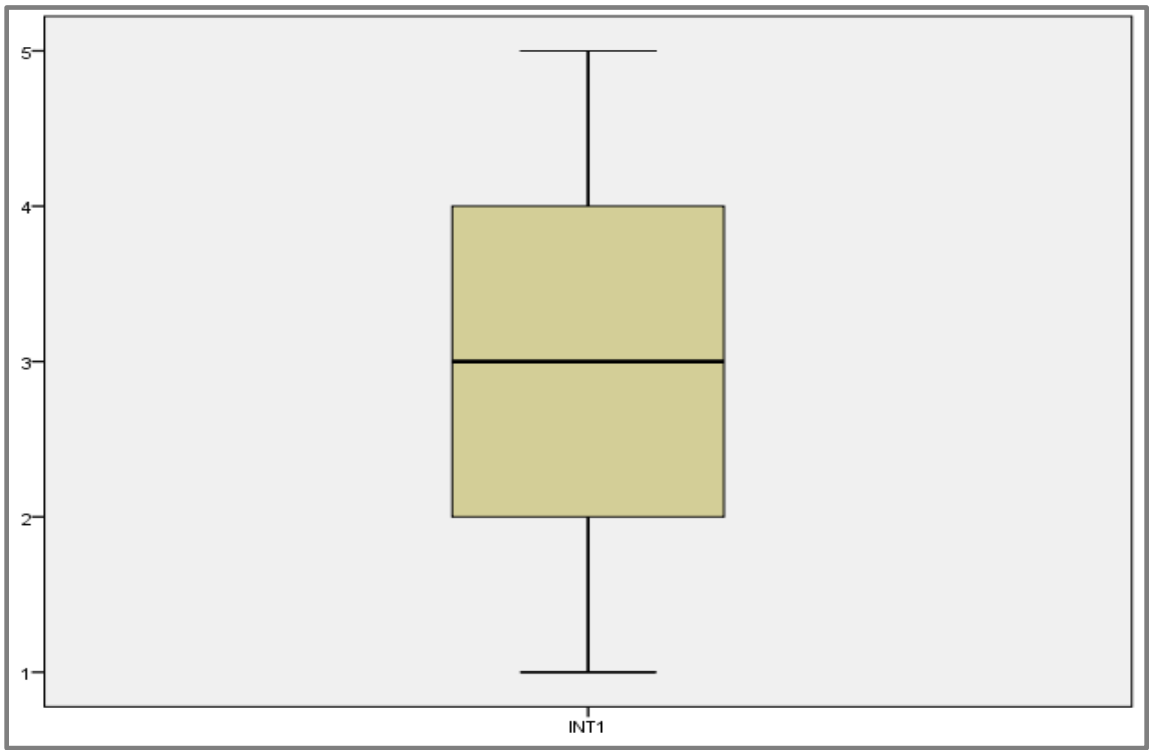

Figure 5-2: Boxplot for Testing Outliers for one of the Intention to Smoke Statements

After detecting outliers and deleting the observations causing the problem, the data under study was investigated through describing the personal profile of the respondents. Such descriptive analysis is displayed in the following section.

5.3 Descriptive Analysis for Respondents' Personal Profiles

In this section, the respondents' personal profile is displayed, where it was found that 500 smokers had participated in the questionnaire administered. Out of 500 questionnaires distributed and collected, 17 questionnaires were unusable because respondents failed to answer most of the questions. Therefore, the 17 questionnaires had been excluded from the sample under study. As a result, only 483 questionnaires were usable and analysed; all of which were in both Arabic (256 respondents) and English (227 respondents). The data was then cleaned up by checking for normality, outliers and missing data; and subsequently 402 questionnaires were left for further analysis.

Some questions had been directed in the questionnaire under study to know the respondents' personal profile and their behaviour towards smoking. The first nine opening questions in the survey were general enquiries about the respondents' water-pipe smoking behaviour. When asked about the times the respondents have smoked shisha in their entire life, the results shown in Table 5-1 illustrate that 59.70%, said they smoked shisha 16 times or more.

Moreover, when asked about the frequency at which they currently smoke shisha, results are shown in Table 5-1, where 34.83% said they smoked at least once each day, or most days each month, followed by 31.84% who said they smoked at least once each week but not daily.

Another question enquired about the duration at which they smoked shisha at this frequency. It was found that almost 30.60% of the respondents answered that it has been two years but less than three, followed by 20.15% who answered that it has been one year but less than two. It is important to highlight the intensity at which the majority of the respondents frequently engaged in WTS.

Enquired about the age of shisha smoking initiation, the highest percentage of respondents acknowledged that they started smoking at the age of 17-18 years (26.37%), followed by 19-20 years (24.38%), and 15-16 years at (21.64%). These results suggest that almost 56% of initial smoking happened between the ages 15-18 years old, where it is not legal for these individuals to smoke. It is worth noting that there are no age restrictions in Egyptian cafés and restaurants

regarding shisha smoking, hence individuals who are under the permitted age of smoking (less than 18 years old) can smoke shisha whenever they want.

The next question in the survey enquired about the respondents' parents' smoking habits, Table 5-1 displays the responses for the question 'Do your parents smoke shisha', for which 57.21% said that both their parents never smoked, followed by 21.14% who answered that one of the parents smoked, while the other did not.

The next question discussed parents' knowledge of the respondents' shisha smoking, where 52.99% replied that none of their parents knew that they smoked shisha, followed by almost 27.61% who acknowledged that both of their parents knew that they smoked shisha, and almost 14.94% who replied that only their mother knew about their engagement in shisha smoking. It is imperative to highlight that almost 50% of the respondents hid their smoking habits from their parents, while others only shared this information with their mothers. This may be due to the respondents' fear of the negative implications this information might have on their parents, especially their father.

Another question in this section enquired if the respondent was also a cigarette smoker. The results obtained show that 52.49% said that they were not cigarette smokers.

Table 5-1 also displayed the results for a question that enquired if the respondents consider themselves "hooked" on smoking shisha, for which almost 75.62% acknowledged that they do consider themselves hooked or addicted to smoking shisha. Yet again, this kind of intense psychological status or feeling towards WTS is noteworthy.

When overviewing the demographics of the respondents, many variables were considered. The age segment covered in this sample consists of Egyptian youth, ages from 18-30. Different ages along this age range were covered in more or less a normally distributed manner, with less focus of age groups of 30+, to ensure the coverage of all the possible ages amongst youth. As illustrated in Table 5-1 below, the majority of the respondents were college graduates (54.98%) and high school graduates (34.83%). The sample also included illiterates as they constitute a rather significant portion of both populations of Cairo and Alexandria. However, their questionnaires were filled out by the interviewer. The majority of the sample were males (54.23%) compared to females (45.77%), given the fact that the majority of the sample reside in

Cairo, where the population structure contains a higher percentage of males than females. It is also noteworthy that the shisha smoking rates of the males are higher than of females in Egypt.

The majority of the sample resided in Cairo (72.89%), followed by Alexandria (25.37%). This is due to the fact that both cities are the highest in population density. The remaining others (1.74%) were respondents who were present in both cities during the data collection period but were residents of different cities like Sharm El Sheikh and the Red Sea. Most respondents were single (73.63%), followed by married (25.12%). The sample also covered special martial statuses like divorced (0.5%) and widowed (0.75%) in order for the sample to be reflective of the populations. The majority of the respondents had no children (80.35%), and the least had two (7.96%). This may be due to the fact that the majority of the sample was single.

When asked about their religion, most respondents were Muslims (94.53%), followed by Christians (4.48%), while the remaining preferred not to say (1%). These percentages approximately reflect the religious status of the Egyptian population where the highest percentages of the population are Muslims. The next question in the personal information asked about their occupation, where the highest percentages were students (31.34%), and the lowest were housewives (8.21%). This, of course, reflects the fact that the majority of the sample fell between the ages of 18-30. Regarding the household income of the respondents, the majority of the sample fell between the income brackets of 5,000 L.E.- less than 10,000 L.E (33.08%) and 2,000 L.E- less than 5,000 L.E (31.09%). These percentages reflect the economic situation in the population of the sample; with the majority of respondents earning moderate incomes of 2,000-less than 10,000 Egyptian pounds.

Table 5-1 shows the frequencies and percentages of the respondents' demographics and smoking behaviour.

Table 5-1: Frequencies for the Respondents Profile

Items	Frequency	Percent	Total
1. How many times have you smoked shisha in your entire life?			
1 or more puffs, but never a full bowl or session	12	3	
1 time	21	5.2	
2–5 times	50	12.4	402
6–15 times	79	19.7	
16 or more times	240	59.7	
2. How frequently do you currently smoke shisha?			
At least once each year, but not monthly	52	12.9	
At least once each month, but not weekly	78	19.4	402
At least once each week, but not daily	132	32.8	
At least once each day, or most days each month	140	34.8	
3. How long have you smoked shisha at this frequency?			
Less than 6 months	44	10.9	
6 months to less than 1 year	44	10.9	
1 to less than 2 years	81	20.1	402
2 years to less than 3 years	123	30.6	
3 years to less than 4 years	45	11.2	
4 years or longer	65	16.2	
4. How old were you when you first smoked shisha, or even tried a puff?			
14 years old or younger	18	4.5	
15-16 years old	87	21.6	
17-18 years old	106	26.4	402
19-20 years old	98	24.4	
21-22 years old	44	10.9	
23 years old or older	49	12.2	
5. Do your parents smoke shisha?			
Both parents had never smoked	230	57.2	
One parent is a former smoker and the other had never smoked	47	11.7	
Both parents are former smokers	8	2	402
One parent is a current smoker and the other had never smoked	85	21.1	
One parent is a current smoker and the other is a former smoker	13	3.2	
Both parents are current smokers	19	4.7	
6. Do your parents know that you smoke shisha?			
My mother knows	58	14.4	402

Items	Frequency	Percent	Total
My father knows	20	5	
Both of my parents know	111	27.6	
None of my parents know	213	53	
7. Do you currently smoke cigarettes?			
Yes	191	47.5	402
No	211	52.5	
8. Do you consider yourself "hooked" on smoking shisha?			
Yes	305	75.8	402
No	97	24.1	
9. Age			
18-21	89	22.1	
22-25	122	30.3	
26-29	99	24.6	402
30 – 33	55	13.7	
34 or above	37	9.2	
10. Highest Completed Level of Education			
Illiterate	1	0.2	
Elementary School	4	1	
High School	140	34.8	402
College Degree	221	55	
Post Graduate Degree	30	7.5	
Other	6	1.5	
11. Gender			
Females	184	45.8	402
Males	218	54.2	
12. City of Residence			
Cairo	293	72.9	
Alexandria	102	25.4	402
Other	7	1.7	
13. Marital Status			
Single	296	73.6	
Married	101	25.1	402
Divorced or Separated	2	0.5	
Widowed	3	0.7	

Items	Frequency	Percent	Total
14. Number of Children			
None	323	80.3	402
One	29	7.2	
Two	32	8	
More than two children	18	4.5	
15. Current Religion			
Muslim	380	94.5	402
Christian	18	4.5	
Prefer not to say	4	1	
16. Current Job Status			
Unemployed	52	12.9	402
Manager/Executives	25	6.2	
Administrative	55	13.7	
Professionals	19	4.7	
Academics	14	3.5	
Self Employed	27	6.7	
Labourers	27	6.7	
Student	126	31.3	
Housewife	33	8.2	
Other	24	6	
17. Average Monthly Household Income in Egyptian Pounds			
Less than 2000	47	11.7	402
2000-less than 5000	125	31.1	
5000-less than 10000	133	33.1	
Over 10,000	97	24.1	

Table 5-2 shows the descriptive analysis; Mode, Minimum, and Maximum for the respondents' demographics.

Table 5-2: Descriptive Analysis for the Demographics

Demographics	Mode	Minimum	Maximum
Age	22-25	18-21	34 or above
Highest Completed Level of Education	Collage Degree	Illiterate	Other
Gender	Male	Female	Male
City of Residence	Cairo	Cairo	Other
Marital Status	Single	Single	Widowed
Number of Children	None	None	More than two children
Current Religion	Muslim	Muslim	Prefer not to say
Current Job Status	Student	Unemployed	Other
Average Monthly Household Income in Egyptian Pounds	5000-less than 10000	Less than 2000	Over 10000

By the end of this section, the respondents' personal profile had been identified and the researcher is ready to analyse the data under study. As a first step in the analysis, the statements are tested to be able to determine to which factor they belong. The following section presents the exploratory factor analysis results.

5.4 Exploratory Factor Analysis

The researcher applied *Exploratory Factor Analysis* (EFA) using the maximum likelihood estimation (MLE) method, where each construct of the personal values, socialisation agents, and religiosity were examined for their construct validity. This step is followed to be able to identify and classify the constructs under study as well as the relevant statements to measure each construct. The researcher allowed orthogonal rotation method of promax for factor loading to be more clearly differentiated. Factor loading should be greater than 0.4 to be considered significant; but for factor loading lower than 0.4 or that cross-loading on more than one factor should be eliminated from the analysis (Hair *et al*., 2012).

Table 5-3 displays the pattern matrix of the exploratory factor analysis applied to the personal values constructs, where it could be observed that Self-Direction antecedents had been merged together. Also, Conformity-Rules and Traditions had been merged together. On the other hand, Stimulation had been eliminated due to cross loading. The new personal values antecedents

became Self-Direction (F1), Conformity-Interpersonal (F2), Conformity – Rules and Traditions (F3), Hedonism (F4), Security – Societal (F5), and Security – Personal (F6). Therefore, the data illustrated a clean factor structure in which it proves construct validity after eliminating some items because of their cross-loading on more than one factor.

Table 5- 3: Exploratory Factor Analysis for Personal Values Dimensions

Statements Coded	F1	F2	F3	F4	F5	F6
Self-Direction Thought 1	.691					
Self-Direction Thought 2	.774					
Self-Direction Thought 3	.782					
Self-Direction Action 1	.758					
Self-Direction Action 2	.703					
Self-Direction Action 3	.612					
Conformity Interpersonal 1			.839			
Conformity Interpersonal 2			.870			
Conformity Interpersonal 3			.823			
Conformity Rules 1		.774				
Conformity Rules 2		.738				
Conformity Rules 3		.613				
Tradition 1		.636				
Tradition 2		.729				
Tradition 3		.687				
Hedonism 2						.880
Hedonism 3						.868
Security – Personal 1					.783	
Security – Personal 2					.752	
Security – Personal 3					.667	
Security – Societal 1				.643	.434	
Security – Societal 2				.752		
Security – Societal 3				.752		

*F: Factor

Table 5-4 displays the pattern matrix of the exploratory factor analysis applied to the socialisation agents' variables, where it could be observed that they are parental influence of father (F1), parental influence of mother (F2), and peer influence (F3). Therefore, the data illustrated a clean factor structure in which it proves construct validity after eliminating some items because of their weak loadings on their factors.

Table 5-4: Exploratory Factor Analysis for Socialisation Agents Dimension

Statements Coded	F1	F2	F3
Parental Influence – Mother 1	.857		
Parental Influence – Mother 2	.905		
Parental Influence – Mother 3	.893		
Parental Influence – Mother 5	.834	.316	
Parental Influence – Father 1		.874	
Parental Influence – Father 2		.886	
Parental Influence – Father 5		.870	
Parental Influence – Father 6		.689	
Peer Influence 1			.900
Peer Influence 2			.902
Peer Influence 3			.879
*F: Factor			

As per the exploratory factor analysis results, the confirmatory factor analysis is conducted to confirm the constructs validity according to the results obtained. The confirmatory factor analysis is discussed in the following section.

5.5 Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) is the next step after EFA to know the factor structure of the dataset and confirm the factor structure extracted in the EFA before launching the structural equation modelling (SEM). At this point, it should be highlighted that the constructs extracted from the EFA are Conservation, peer influence, parental influence – father and religiosity. AMOS 24 program was used and ML method was applied to show the factor loading for each variable and their model fit. When undergoing CFA using the covariance method, the factor loadings indicate a problem of Heywood, where some factor loadings were greater than 1.00. Thus, some items had been deleted to fix the problem and the constraints were moved. Figure 5-

3 shows the results of the measurement model, where a Heywood case is found in Parental Influence – Father and Religiosity. The model fit of the confirmatory factor analysis were computed, which are represented in the minimum discrepancy, P-value, goodness of fit, adjusted goodness of fit, normed fit index, non-normed fit index, comparative fit index, root mean square residual, root mean square of approximation and PCLOSE.

The minimum discrepancy (CMIN/DF) is computed as the chi-square divided by the degrees of freedom. P-value is defined as the probability of getting as larger discrepancy as occurred with the present sample. Goodness of fit (GFI) and Adjusted Goodness of Fit (AGFI) Indices evaluate the fit of the model versus the number of estimate coefficients or the degrees of freedom needed to achieve that level of fit. The Bentler-Bonett normed fit index (NFI) and the Tucker-Lewis index or Bentler-Bonett non-normed fit index (TLI) assess the incremental fit of the model compared to a null model. The comparative fit index (CFI) is an incremental fit index which is computed by evaluating the covariance matrix. The root mean square residual (RMR) shows the amount by which the sample variances and covariances differ from their estimates obtained under the assumption that the model is correct. The root mean square of approximation (RMSEA) is an informative criterion in covariance structure modelling and measures the amount of error present when attempting to estimate the population. Finally, PCLOSE gives a test of exact fit (Hair *et al*., 2012).

Table 5-5 shows these indicator values in CFA and the recommended values for them. It could be observed that CMIN/DF value was 2.115, P-value was 0.000, GFI was 0.902, AGFI was 0.877, NFI was 0.890, TLI was 0.928, CFI was 0.938, RMR was 0.068, RMSEA was 0.053 and PCLOSE was 0.219.

Table 5-5: Fit Indices and Thresholds for one of the Iterations of the Measurement Model

Measure	Results	Threshold
Chi-square/df	2.115	< 2 excellent; < 3 good; < 5 sometimes permissible
P-value	0.000	> 0.05
GFI	0.902	> 0.90
AGFI	0.877	> 0.90
NFI	0.890	> 0.90
TLI	0.928	> 0.95
CFI	0.938	> 0.95 great; > 0.90 traditional; > 0.80 sometimes permissible

Measure	Results	Threshold
RMR	0.068	< 0.09
RMSEA	0.053	< 0.05 good; 0.05-0.10 moderate; > 0.10 bad
P-Close	0.219	> 0.05

*GFI: Goodness of Fit
*AGFI: Adjusted Goodness of Fit Index
* NFI: Normed Fit Index
* TLI: Tucker-Lewis Index
* CFI: Comparative Fit Index
* RMR: Root Mean Square Residual
* RMSEA: Root Mean Square of Approximation

Figure 5-3 shows the confirmatory factor analysis had been applied, where the factor loadings are shown on arrows implying good factor loadings for the confirmatory factor analysis.

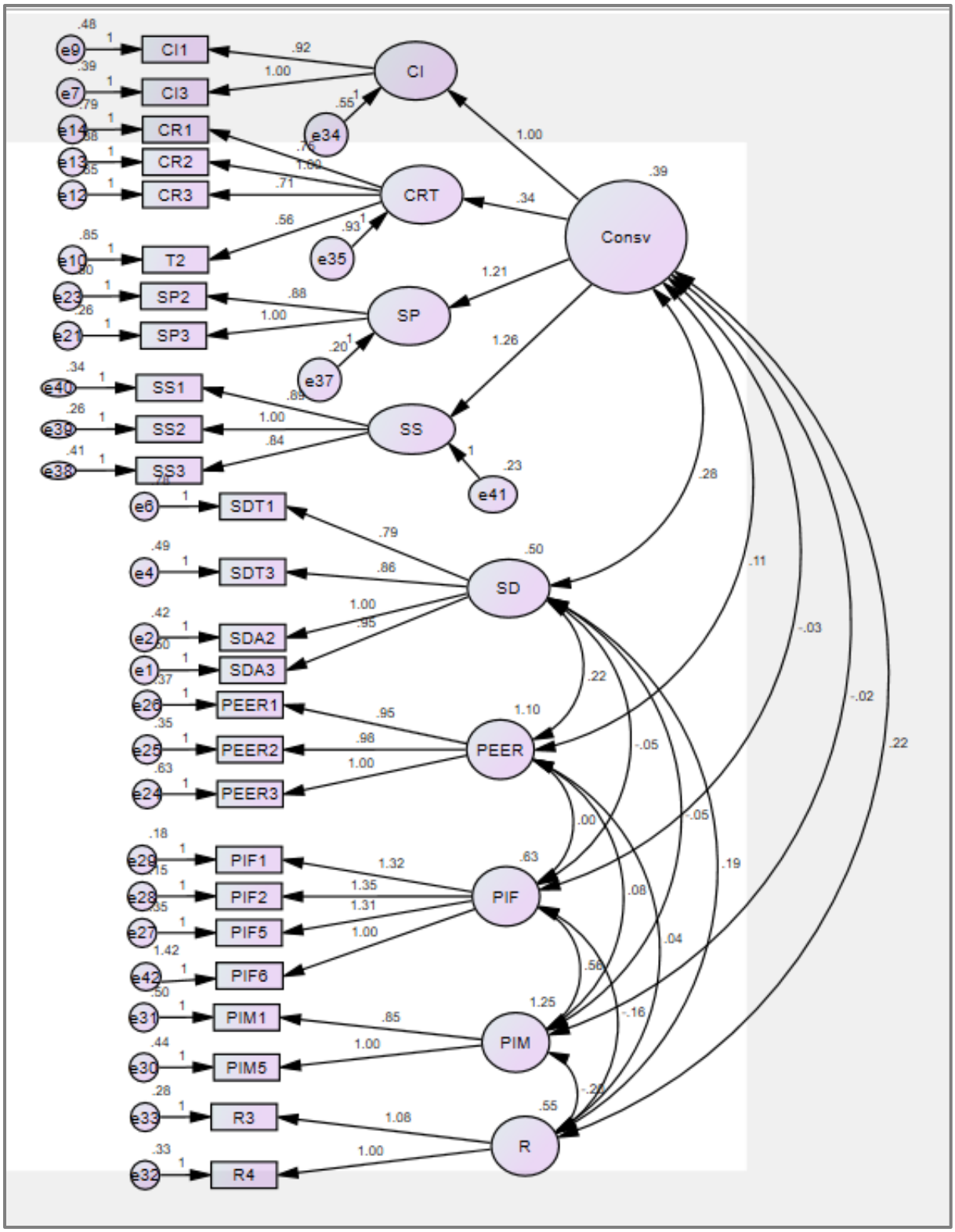

Figure 5-3: CFA for one of the Measurement Model Iterations

To solve the problem of Heywood case, a second iteration of the measurement model is conducted as shown in Figure 5-4. Table 5-6 shows the model fit indices, where it could be observed that CMIN/DF value was 2.103, P-value was 0.000, GFI was 0.950, AGFI was 0.924, NFI was 0.956, TLI was 0.968, CFI was 0.976, RMR was 0.042, RMSEA was 0.052 and PCLOSE was 0.353. The indices values displayed and shown in the table means that the data fit the model quite well, with the exception of p-value for the model that may be caused by larger sample size.

Table 5-6: Fit Indices and Thresholds for the final Iteration of the Measurement Model

Measure	Results	Threshold
Chi-square/df	2.103	< 2 excellent; < 3 good; < 5 sometimes permissible
P-value	0.000	> 0.05
GFI	0.950	> 0.90
AGFI	0.924	> 0.90
NFI	0.956	> 0.90
TLI	0.968	> 0.95
CFI	0.976	> 0.95 great; > 0.90 traditional; > 0.80 sometimes permissible
RMR	0.042	< 0.09
RMSEA	0.052	< 0.05 good; 0.05-0.10 moderate; > 0.10 bad
P-Close	0.353	> 0.05

*GFI: Goodness of Fit
*AGFI: Adjusted Goodness of Fit Index
* NFI: Normed Fit Index
* TLI: Tucker-Lewis Index
* CFI: Comparative Fit Index
* RMR: Root Mean Square Residual
* RMSEA: Root Mean Square of Approximation

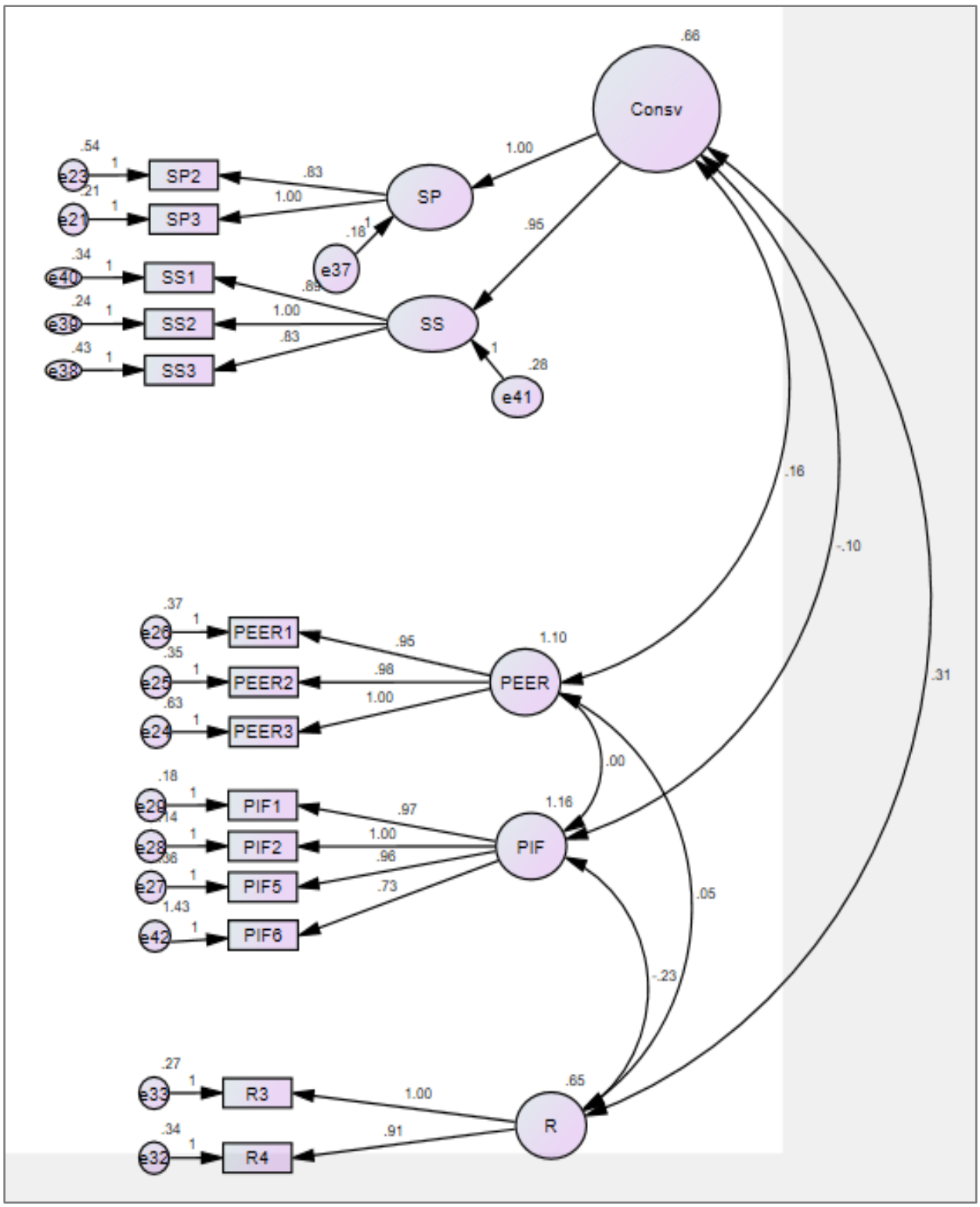

Figure 5-4: CFA for the Final Iteration of the Measurement Model

Moreover, the validity and reliability analysis were applied to the statements remaining after applying the confirmatory factor analysis. Table 5-7 shows the convergent validity and the reliability of the constructs, where it could be noticed that the data showed Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) greater than 0.500, which was considered to be good, and a significant Bartlett's Sphericity test. The average variance extracted (AVE) was found to be more than 50%. Also, all Cronbach's alpha values are greater than 0.7. The values obtained implied an adequate convergent validity as well as an adequate reliability.

Table 5-7: Validity and Reliability Tests for the Research Variables and Cronbach's Alpha

Variable	**Item**	**Factor Loading**	**AVE**	**KMO**	**P-Value**	***Cronbach's Alpha***
Security Personal	SP 2 SP 3	0.821 0.821	82.081%	0.500	0.000	0.781
Security Societal	SS 1 SS 2 SS 3	0.745 0.848 0.747	77.985%	0.500	0.000	0.859
Peer Influence	PEER 1 PEER 2 PEER 3	0.812 0.819 0.773	80.128%	0.739	0.000	0.874
Parental Influence Father	PIF 1 PIF 2 PIF 5 PIF 6	0.846 0.868 0.844 0.489	76.175%	0.799	0.000	0.880
Religiosity	R 3 R 4	0.830 0.830	82.991%	0.500	0.000	0.795
Attitude	ATT 3 ATT 7	0.732 0.732	73.219%	0.500	0.000	0.700
Intention	INT 1 INT 2	0.861 0.861	86.139%	0.500	0.000	0.839
Perceived Behaviour Control	PC 1 PC 2	0.934 0.934	93.446%	0.500	0.000	0.930
Fear of Negative Evaluation	FNE 1 FNE 3 FNE 5 FNE 6 FNE 8 FNE 9 FNE 11 FNE 12	0.553 0.521 0.590 0.558 0.520 0.472 0.558 0.460	52.908%	0.861	0.000	0.872
*KMO: Kaiser-Meyer-Olkin *AVE: The Average Variance Extracted						

In addition, the discriminant validity was applied to the statements by computing the correlation matrix and comparing the square root of AVE of each construct obtained in Table 5-7 with the correlation between such construct and other constructs. Table 5-8 shows the discriminant validity of the constructs remaining after the final iteration of the measurement model, where it could be observed that all square root of AVE values for a specific construct are greater than the correlations between such construct and other constructs. It could also be observed that all composite reliability values are greater than 0.7, indicating adequate validity.

Table 5-8: Discriminant Validity for the Research Variables

	C.R.	1	2	3	4	5	6	7
1. Conservation	0.844	(0.800)						
2. Peer Influence	0.877	.124*	(0.894)					
3. Religiosity	0.796	.340**	.062	(0.910)				
4. Parental Influence	0.899	-.100*	.017	-.212**	(0.872)			
5. Attitude	0.862	-.306**	.103*	-.294**	.225**	(0.856)		
6. Perceived Behavior Control	0.791	-.051	.181**	-.109*	.160**	.119*	(0.964)	
7. Intention	0.727	.135**	.378**	.009	.041	.134**	.326**	(0.927)

After data had been tested for validity and reliability, research variables are computed to be able to display the descriptive statistics for them. The following section displays the descriptive analysis showing the mean, standard deviations and frequencies for the research variables.

5.6 Descriptive Analysis for the Variables

The research variables are computed as the average of the statements found to have adequate validity and reliability. The research variables descriptive statistics after being computed are shown in Table 5-9, with their means and standard deviations, according to each variable scale. It could be observed that the mean values for the research variables; Self-Direction, Conformity Interpersonal, Conformity Rules and Traditions, Security Personal, Peer Influence, Parental Influence Father, Parental Influence Mother, Religiosity, Intention, Perceived Behaviour Control and Fear of Negative Evaluation are computed according to their 5-point likert scale as 3.8781, 3.6866, 3.2761, 3.9652, 3.3930, 1.9005, 2.3408, 3.6841, 3.3831, 2.5398, and 2.6318

respectively. Similarly, the mean value for the research variable; Attitude is computed according to their 7-point likert scale as 2.1642.

Table 5-9: Descriptive Analysis of the Research Variables

Variable	N	Scale	Mean	Std. Deviation
Security Societal	402	5-Point	3.8682	0.93959
Security Personal	402	5-Point	3.9652	0.87855
Peer Influence	402	5-Point	3.3930	1.12543
Parental Influence Father	402	5-Point	1.9005	1.08953
Parental Influence Mother	402	5-Point	2.3408	1.21535
Religiosity	402	5-Point	3.6841	0.97459
Attitude	402	7-Point	2.1642	1.02240
Intention	402	5-Point	3.3831	1.21196
Perceived Behaviour Control	402	5-Point	2.5398	1.27499
Fear of Negative Evaluation	402	5-Point	2.6318	0.92014

According to the above-mentioned steps, the research variables are ready for hypotheses testing. To be able to test the hypotheses under study, the study had to first verify the assumptions and manipulate the data – if needed – to be able to conduct the model required for testing the research hypotheses.

5.7 Testing Assumptions

This section will verify the assumptions of the normality and multicollinearity required for running the structural equation modelling as one of the parametric tests.

5.7.1 Normality Assumption

Normality is verified to determine if a data set is normal. According to the result, parametric analysis such as Structural Equation Modelling (SEM) could be used. An assessment of the normality of data is a prerequisite for many statistical tests because it is an underlying assumption in parametric testing. Two common methods are identified to check this assumption:

1) *Kolmogorov-Smirnov test of normality:* tests the normality assumption for samples greater than 50 observations. It assumes the data to be normal if the P-value is greater than 0.05. The

table below shows the results of Kolmogorov-Smirnov testing, where it appears that the data under study are all not normally distributed.

Table 5-10: Kolmogorov-Smirnov Test for the Normality of the Research Variables

	Kolmogorov-Smirnov		
	Statistic	**Degrees of Freedom**	**P-value**
Conformity Interpersonal	0.238	402	0.000
Conformity Rules and Traditions	0.236	402	0.000
Security Societal	0.213	402	0.000
Security Personal	0.222	402	0.000
Peer Influence	0.180	402	0.000
Parental Influence Father	0.318	402	0.000
Parental Influence Mother	0.226	402	0.000
Religiosity	0.197	402	0.000
Attitude	0.196	402	0.000
Intention	0.185	402	0.000
Perceived Behaviour Control	0.184	402	0.000
Fear of Negative Evaluation	0.225	402	0.000

2) Skewness and Kurtosis: a rule of thumb claiming that a variable is reasonably close to normal if its skewness and kurtosis have values between –1.0 and +1.0 (Kleinbaum, Kupper, Nizam and Muller, 1988). Table 5-11 below shows that skewness of all variables under study is between these assumed ranges. Thus, all variables under study are close to normal.

Table 5-11: Skewness and Kurtosis for the Normality of the Research Variables

Variables	**N**	**Skewness**		**Kurtosis**	
		Statistic	**Std. Error**	**Statistic**	**Std. Error**
Conformity Interpersonal	402	-0.695	0.122	0.087	0.243
Conformity Rules and Traditions	402	-0.044	0.122	-0.165	0.243
Security Societal	402	-0.441	0.122	-0.467	0.243
Security Personal	402	-0.420	0.122	-0.660	0.243
Peer Influence	402	-0.175	0.122	-0.836	0.243
Parental Influence Father	402	0.861	0.122	-0.363	0.243
Parental Influence Mother	402	0.354	0.122	-0.981	0.243
Religiosity	402	-0.323	0.122	-0.390	0.243
Attitude	402	0.525	0.122	-0.328	0.243
Intention	402	-0.388	0.122	-0.682	0.243
Perceived Behaviour Control	402	0.455	0.122	-0.774	0.243
Fear of Negative Evaluation	402	0.023	0.122	-0.392	0.243

5.7.2 Multicollinearity Assumption

Multicollinearity occurs when two or more predictors in a model are highly correlated with each other. This leads to problems with understanding which predictors contribute to the variance explained in criterion, as well as technical issues in calculating a multiple regression model. So, redundant information about the criterion are provided. With respect to this, variance inflation factor (VIF) was conducted for the research model. The VIF values for all models were shown in the tables below to be less than 5. This result indicates that the independent variables in the research model are not inter-correlated among themselves. This implies that the problem of multicollinearity does not exist.

Table 5-12: VIF Values of the Research Variables

Research Variables	**VIF**
Conformity Interpersonal	1.340
Conformity Rules and Traditions	1.115
Security Societal	1.213
Security Personal	1.430
Peer Influence	1.211
Parental Influence Father	1.655
Parental Influence Mother	1.558
Religiosity	1.120
Attitude	1.222
Perceived Behaviour Control	1.176
Fear of Negative Evaluation	1.191
*VIF: Variance Inflation Factor	

5.8 Hypotheses Testing

In this section, the researcher displays the results obtained by the structural equation model to respond to the research hypotheses. Figure 5-5 shows the SEM model conducted for this research including the research constructs and the relationships between them.

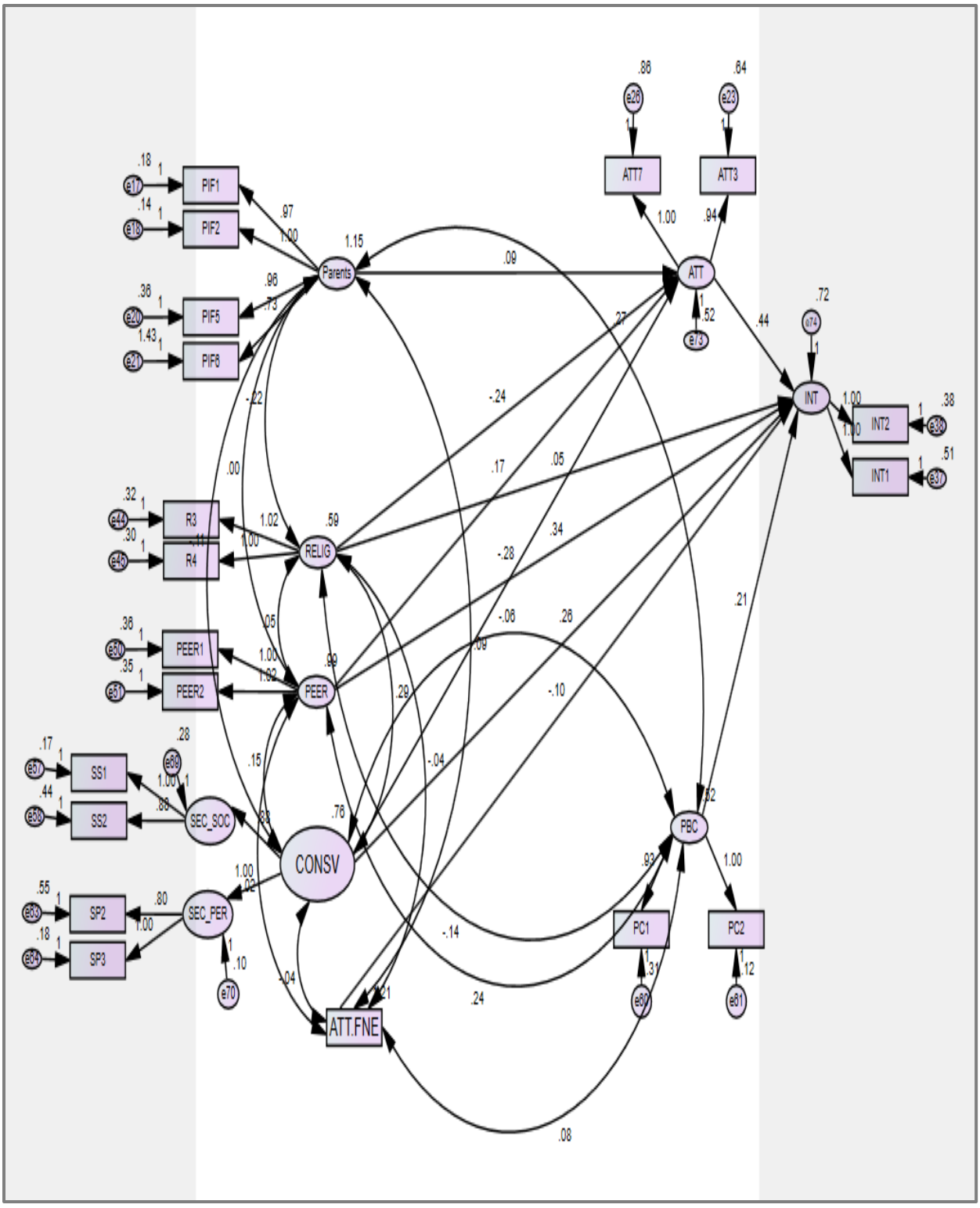

Figure 5-5: SEM Model to be applied

According to the SEM model illustrated, some variables were ignored either in the measurement model or when fitting the SEM model. Those variables were: self-direction, stimulation, hedonism, conformity, and traditions, parental influence – mother and subjective norms. Accordingly, the variables included in the SEM model for testing were: conservation variables, parental influence – father, peer influence, religiosity, attitudes towards WTS, PBC, intentions to smoke.

This following section is divided into subsections according to the research hypotheses. The first one will discuss the direct impact of personal values, socialisation agents and religiosity on the intentions to smoke. The second section discusses the direct impact of attitudes towards WTS and PBC. The third section discusses the mediation role of attitudes towards WTS between the independent variables and intentions to smoke. The fourth section discusses the moderation role of FNE between attitudes toward WTS and PBC on one side and intentions to smoke on the other side. The last section discusses the moderation role of gender between conservation, socialisation agents and religiosity and attitude towards WTS.

5.8.1 The Direct Relation between Personal Values, Socialisation Agents, Religiosity and Attitudes towards Water-pipe Tobacco Smoking

In this section, the direct relations between the independent variables; personal values, socialisation agents, and religiosity and the dependent variable; attitudes towards WTS was tested. Therefore, this section tests the following hypotheses.

H_1: Personal Values affect attitudes towards water-pipe tobacco smoking

H_2: Socialisation Agents affect attitudes towards water-pipe tobacco smoking

H_3: Religiosity affects attitudes towards water-pipe tobacco smoking

First of all, the fit indices are reported in Table 5-13, where it was found that all fit indices are within the acceptable range, indicating that the data perfectly fit the model under study.

Table 5-13: Fit Indices and Thresholds for the Structural Equation Model

Measure	Results	Threshold
Chi-square/df	1.598	< 2 excellent; < 3 good; < 5 sometimes permissible
P-value	0.000	> 0.05
GFI	0.951	> 0.90
AGFI	0.925	> 0.80
NFI	0.949	> 0.90
TLI	0.973	> 0.95
CFI	0.980	> 0.95 great; > 0.90 traditional; > 0.80 sometimes permissible
RMR	0.045	< 0.09
RMSEA	0.039	< 0.05 good; 0.05-0.10 moderate; > 0.10 bad
P-Close	0.833	> 0.05

*GFI: Goodness of Fit
* AGFI: Adjusted Goodness of Fit Index
* NFI: Normed Fit Index
* TLI: Tucker-Lewis Index
* CFI: Comparative Fit Index
* RMR: Root Mean Square Residual
* RMSEA: Root Mean Square of Approximation

Accordingly, the SEM model is fitted as shown in Figure 5-15 and the results were shown in Table 5-14. It could be observed that there is a significant impact of religiosity, conservation, and peer influence on attitudes toward WTS, as the corresponding P-values are 0.007, 0.000 and 0.002 respectively, which means all P-values are less than 0.05.

Table 5-14: Structural Equation Model Results for the Overall Effect on Attitude

			Estimate	S.E.	C.R.	P-Value
Parents	--->	Attitude	.092	.049	1.891	.059
Religiosity	--->	Attitude	-.239	.089	-2.697	.007
Conservation	--->	Attitude	-.278	.079	-3.532	***
Peer Influence	--->	Attitude	.170	.056	3.040	.002

*SE: Standard Error
*CR: Critical Ratio

Therefore, the first hypothesis that personal values affect attitudes towards WTS is partially supported, as only Conservation (H1b) shows a significant negative influence on attitude towards WTS and was supported. Openness to change (H1a) is not tested as it was dropped from the model and therefore was not supported. Moreover, the second hypothesis that

socialisation agents affects attitude towards WTS is partially supported, as peer influence (H2a) shows a significant positive influence on attitude towards WTS, while parental influence (H2b) does not show a significant influence on attitude towards WTS. In addition, the third hypothesis that religiosity negatively affects attitude towards WTS is supported.

5.8.2 The Impact of Attitudes towards Water-Pipe Tobacco Smoking on Intentions to Smoke

In this section, the direct and mediation role of attitudes toward WTS between the independent variables; personal values, socialisation agents, and religiosity and the dependent variable; intentions to smoke was tested. Consequently, this section tests the following hypothesis.

H_4: Attitudes toward water-pipe tobacco smoking affects intentions to smoke

It could be noticed from Table 5-15 that there is a significant positive influence of attitudes on intentions to smoke (P-value is 0.000). Also, it was observed that there is a partial mediation role of attitudes towards WTS between each of conservation and peer influence and intentions to smoke. This is due to the fact that there is a significant impact of conservation and peer influence, which means that they remain having a significant impact on intentions to smoke in the presence of attitudes toward WTS, as the corresponding P-values are all less than 0.05. This implies a partial mediation role of attitudes toward WTS.

On the other hand, there is a partial mediation role of attitudes toward WTS between religiosity and intentions to smoke. This is due to the fact that there is an insignificant impact of religiosity, which means that religiosity has an insignificant impact on intentions to smoke in the presence of attitudes toward WTS, as the corresponding P-value is greater than 0.05.

Table 5-15: Structural Equation Model Results for Attitude Impact

			Estimate	**S.E.**	**C.R.**	**P-Value**
Attitude	--->	Intention	0.437	0.103	4.224	***
Religiosity	--->	Intention	0.055	0.093	0.594	0.553
Peer Influence	--->	Intention	0.337	0.064	5.239	***
Conservation	--->	Intention	0.258	0.085	3.024	0.002
*SE: Standard Error *CR: Critical Ratio						

Therefore, the fourth hypothesis that attitudes toward WTS affect intentions to smoke is supported.

5.8.3 The Impact of Perceived Behavioural Control on Intention to Smoke

In this section, the direct impact of PBC on the dependent variable intentions to smoke was tested. Thus, this section tests the following hypothesis.

H_5: Perceived behavioural control affects intentions to smoke

It could be noticed from Table 5-16 that there is a significant positive impact of PBC (P-value is 0.000) on Intention to smoke.

Table 5-16: Structural Equation Model Results for PBC

			Estimate	**S.E.**	**C.R.**	**P-Value**
Perceived Behaviour Control	--->	Intention	.212	.046	4.624	***
*SE: Standard Error *CR: Critical Ratio						

Therefore, the fifth hypothesis that PBC affects intentions to smoke is supported.

5.8.4 The Moderation Role of Fear of Negative Evaluation between Attitude and Intentions to Smoke

In this section, the moderation role of FNE between each of attitudes towards WTS and the dependent variable intentions to smoke was tested. Accordingly, this section tests the following hypothesis

H_7: Fear of negative evaluation moderates the relationship between attitudes towards water pipe tobacco smoking and intentions to smoke

To test the moderation role, the analysis is conducted by testing the interaction effect between the moderator and the independent variables on the dependent variable. Therefore, an interaction variable is computed between Fear of Negative Evaluation and Attitude. The interaction variable is computed by multiplying the standardized values of the variable; Fear of Negative Evaluation by the standardized values of the variable; Attitude. The standardized values of a variable are the values of the variable after subtracting its mean value. Accordingly, the new created variable of

the interaction variable between Fear of Negative Evaluation and Attitude is regressed on the dependent variable; Intention. The resulting values are presented in Table 5-16, where a small P-value corresponding to the interaction variable (P-value < 0.05) indicates a significant moderation role of Fear of Negative Evaluation between Attitude and Intention, while a large P-value corresponding to the interaction variable (P-value > 0.05) indicates an insignificant moderation role of Fear of Negative Evaluation between Attitude and Intention. It could be noticed from Table 5-17 that there is a significant negative moderation role of FNE between attitudes and intentions to smoke, as the corresponding P-value of the interaction effect is less than 0.05.

Table 5-17: Structural Equation Model Results for FNE Moderation

			Estimate	S.E.	C.R.	P-Value
Attitude	--->	Intention	.437	.103	4.224	***
Attitude * Fear-of-Negative-Evaluation	--->	Intention	-.097	.046	-2.116	.034
*SE: Standard Error *CR: Critical Ratio						

Therefore, the seventh hypothesis that the FNE moderates the relationship between attitudes towards WTS and intentions to smoke is supported.

5.8.5 The Moderation Role of Gender between Conservation, Socialisation Agents and Religiosity and Attitude towards WTS

In this section, the researcher tests the moderation role of gender between each of personal values, socialisation agents and religiosity and attitudes towards WTS. So, this section tests the following hypothesis.

H_8: Gender moderates the relationship between the research variables and attitudes towards water-pipe tobacco smoking

To test the moderation role of Gender, again the analysis is conducted by testing the interaction effect between the moderator (Gender) and the independent variables (personal values, socialisation agents and religiosity) on the dependent variable (Attitude). Therefore, an interaction variable is computed between Gender and each of the research variables; personal

values, socialisation agents and religiosity. The interaction variable is computed by multiplying the standardized values of the variable; Gender by the standardized values of the variables; personal values, socialisation agents and religiosity. The resulting variables are three new created interaction variables, the first is the interaction variable between Gender and Personal Values, the second is the interaction variable between Gender and socialisation agents, while the third is the interaction variable between Gender and religiosity. Accordingly, the new created variable of the interaction variables between Gender and each of the research variables; personal values, socialisation agents and religiosity are regressed on the dependent variable; Attitude.

It could be noticed from Table 5-18 that there is an insignificant moderation role of gender between each of personal values, socialisation agents and religiosity and attitudes towards WTS, as the corresponding P-value is greater than 0.05.

Table 5-18: Structural Equation Model Results for Gender Moderation

			Estimate	**S.E.**	**C.R.**	**P-Value**
Parents*Gender	--->	Attitude	-0.068	0.114	-.0596	0.551
Religiosity*Gender	--->	Attitude	-0.198	0.193	-1.023	0.306
Peer Influence*Gender	--->	Attitude	0.700	0.443	1.580	0.114
Conservation*Gender	--->	Attitude	-0.365	0.213	-1.712	0.087
*SE: Standard Error *CR: Critical Ratio						

Therefore, the eighth hypothesis that gender moderates the relationship between personal values, socialisation agents and religiosity and attitudes towards WTS is not supported.

5.9 Conclusion

The above-mentioned results and findings reveal that there are some variables that were ignored either in the measurement model or when fitting the SEM model. Those variables are: subjective norms, self-direction, stimulation, hedonism, conformity, traditions, and parental influence – mother. The relationship found after fitting the SEM model shows a significant effect of conservation variables, peer influence and religiosity on Egyptians' attitudes towards WTS. Also, a significant effect of both attitudes and PBC were found on intentions to smoke. In addition, FNE was found to be significantly moderating the relationship between attitudes

towards WTS and the intention to smoke. The research findings could be summarised as shown in Table 5-19, as follows:

Table 5-19: Summary of Hypotheses Results

Hypothesis	Description	Results
H_{1a}	Openness to Change affects attitudes towards water-pipe tobacco smoking	Not Tested
H_{1b}	Conservation affects attitudes towards water-pipe tobacco smoking	Supported
H_{2a}	Peer Influence affects attitudes towards water-pipe tobacco smoking	Supported
H_{2b}	Parental Influence affects attitudes towards water-pipe tobacco smoking	Not Supported
H_3	Religiosity affects attitudes towards water-pipe tobacco smoking	Supported
H_4	Attitudes towards water-pipe tobacco smoking affects intentions to smoke	Supported
H_5	Perceived behavioural control affects intentions to smoke	Supported
H_6	Subjective Norms affect intentions to smoke	Not Tested
H_7	Fear of negative evaluation moderates the relationship between attitudes towards water-pipe tobacco smoking and intentions to smoke	Supported
H_8	Gender moderates the relationship between the research variables and attitudes towards water-pipe tobacco smoking	Not Supported

Finally, the research findings could be summarised in the model summary shown in Figure 5-16.

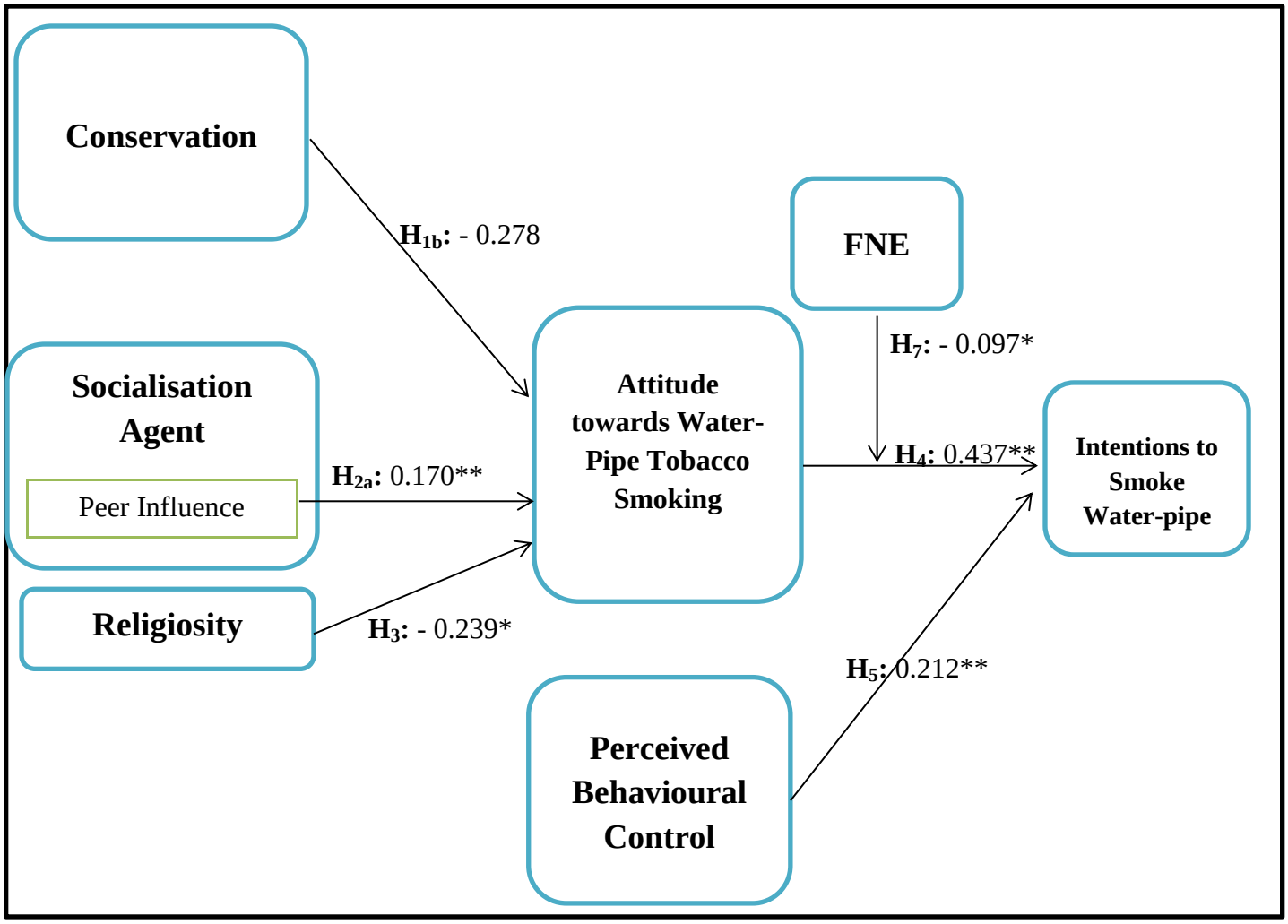

Figure 5-6: Model Summary and Findings

Chapter Six

Research Discussion

Chapter Six

Research Discussion

6.1 Overview

WTS has always been rooted in the old traditions of Middle Eastern societies (Akl *et al.,* 2011; Maziak *et al.,* 2015). However, those ancient traditions that were once associated with older men are now re-emerging among the youth and women around the world, especially in the EMR (Jawad *et al.,* 2014; Jawad *et al.,* 2018). With the growing need for effective interventions and WTS cessation efforts, this thesis aimed to provide a better understanding of the factors that influence WTS behaviour among the youth and young adults in the EMR, focusing mainly on Egypt. The Egyptian context was the emphasis in this study due to evidences of recent studies, declaring that the highest percentage of WTS (as well as cigarettes) was found in Egypt, among other EMR counties that were studied (Abu-Rmeileh *et al*., 2018; Jawad *et al*., 2018).

This research followed a positivist philosophical stance. A proposed conceptual framework was constructed after reviewing prior literature. According to the proposed conceptual framework, openness to change, conservation, socialisation agents (parents and peers), and religiosity were considered as the independent variables. Furthermore, the attitude towards WTS was considered as a mediator. The attitudes towards WTS, along with PBC and subjective norms, influenced intention to smoke. Thus, intention to smoke was considered as the dependent variable. The proposed conceptual framework also suggested FNE and Gender as moderating variables. Subsequently, a well-defined methodology was recognised to guide the research and test the conceptual framework. A quantitative approach was used to collect the data, using a structured questionnaire. The data was analysed using a SEM model for testing the effect of the independent variables on the dependent variables. The results were obtained using AMOS – version 23.

This chapter reviews the overall outcomes that were concluded from the data analyses. It discusses and relates the research findings with the results of previous studies. Furthermore, implications of the current research findings are indicated, explaining the associations and suggestions for the empirical evidence. The conclusion of this chapter ends with a summary of the overall findings and their implications. Figure 6-1 shows the chapter outline.

Figure 6-1: Research Discussion Outline

6.2 Research Discussion

The research discussion presented in the following section discusses the findings of this study. The findings are compared and associated with former outcomes of past research. The outcomes of each hypothesis in this study are reviewed, assessed, and compared separately.

6.2.1 Personal Values

The first hypothesis (H1), personal values affect attitudes towards WTS, contained two sub hypotheses: (H1a) openness to change and (H1b) conservation. According to the confirmatory factor analysis of the model, some items had been deleted to achieve the accepted model fit indices (before testing the hypotheses). Accordingly, it was found that the variable, openness to change, was deleted from the measurement model and the structural model. This exclusion suggested that openness to change did not contribute to the theoretical model. Thus, this sub hypothesis was excluded from further testing. However, the variable, conservation, remained within the model. It was considered for more testing. This variable in theory opposes the openness to change variable (Schwartz et al., 2012).

When testing the influence of conservation on the attitude towards WTS, the outcomes indicated that: there is a significant, inverse relationship between both constructs. This conclusion suggested that individuals who place high importance on conservation values are likely to hold more unfavourable attitudes towards WTS. In general, values act as motivational goals people

aspire to achieve. They were ideal concepts that are deeply embedded in society's culture, collective behaviour, traditions, and institutions (Schwartz 1992; 1994). Given this understanding of values, the results of this study implied that in the shisha smoking context, the youth and young adults value stress compliance. They focus on avoiding actions that might upset or harm others and would rather behave in a way to avoid angering others. Conservation values, such as security, have high importance for self-restriction, order, and avoiding change (Schwartz et al., 2012). Likewise, the outcomes of this research suggested that conservation values play a protective role against WTS.

This result is supported by other prior studies of values and deviant behaviour and substance use. For instance, both Cole et al. (2007) and Rees, Thompson, Rees and Cluphf. (2005) found conservation values to be protective and associated with lower substance use. A UK study by Kristiansen (1985) clarified that heavy smokers were associated with hedonistic values (e.g. exciting life), and light smokers emphasised traditional values (e.g. family/national security). Another study by Young and West (2010) supported this notion, arguing that independent and rebellious values (non-traditional) were related to higher substance use, emphasising openness to change values, which reflects the acceptance of new ideas, the willingness to create new experiences, and enjoy life.

In this study, conservation values had an impact on shaping the attitudes of Egyptian youth and young adults towards WTS. For example, statements that were associated with developing an attitude towards WTS and reflecting conservation values were: “It is important to them to live in secure surroundings” and “having order and stability in society is important to them.” These statements supported the reasoning that individuals with higher conservation values will develop a more unfavourable attitude towards WTS. This implied that in collectivistic cultures, like Egypt, individuals are more inclined to stick with cultural traditions and norms, and conform to societal rules. In these societies, youth and young adults value social stability, taking decisions that are anxiety-free. Their decisions usually do not upset the people around them. Likewise, they are less inclined to behave in a manner that will disrupt their social/personal peace.

Prior studies in WTS proposed several reasons why youth and young adults smoke water-pipes. The studies indicated that people smoke because of: (1) feelings of excitement, (2) trying something new, (3) for curiosity and (4) for the overall sensory experience that is provided in

WTS (Ahmed et al., 2011; Erbaydar, Bilir and Yildiz, 2010; Griffiths et al., 2011; Kelishadi et al., 2007). In addition, other studies linked reasons for water-pipe smoking (or not smoking) to cultural purposes and motivations, clinging to traditions (Akl et al., 2015; Hammal et al., 2008; Jamil et al., 2009). Similarly, some research claimed that a reason for not engaging in WTS is because it is considered inappropriate by society (Khalil et al., 2013).

Curiosity and entertainment reasons for smoking are linked to openness to change values (Ahmed et al., 2011; Griffiths et al., 2011). However, these reasons might trigger initial smoking experiences among the younger age brackets. As Akl and colleagues (2015) argued, younger water-pipe smokers associated initial water-pipe smoking with curiosity. As water-pipe smokers grow older, their values are more in line with their societal norms and social groups (conservation values). Since the majority of the age sample of this current study was 18-30 years old, the significance of the conservation values appeared strongly.

It is worth noting that results of this thesis find that: conservation values are found to positively influence Egyptian youths and young adults' intentions to engage in WTS, regardless of these unfavourable attitudes created. Such contradiction in attitudes and behaviour (with regard to values) reveals an attitude-intention gap. This gap needs to be further explored. It is possible that, regardless of the unfavourable impressions created against WTS; these conservation values also guide water-pipe smokers into conforming to certain social groups' behaviour to smoke (in certain situations and occasions where it is accustomed to smoke shisha). For example, WHO (2015) advisory note on WTS mentioned how on certain occasions, like the month of Ramadan, family and friends would gather together after breaking their fast and participate in WTS. Water-pipe smoking is a central activity and social experience associated with Ramadan (Nakkash et al., 2011). Similarly, almost all WTS literature explained how WTS is a central component of social and family gatherings (Afifi et al., 2013; Maziak et al., 2015) where one might be offered an opportunity to smoke for socialising and in spirit of good hosting.

Another possible explanation for these contradicting results lies in Roccas and Savig's (2010) link between personal values, situational strength and cultural tightness. According to Roccas and Savig (2010), personal values can play a stronger or weaker role in guiding behaviour based on the strength of situation that an individual is in (e.g. being in a situation where this individual is expected to smoke a water-pipe during a summer night out with friends), in relation to the

culture that it is taking place in. For example, because WTS is common and widely accepted in the Egyptian culture, the role of personal values (that found to negatively affect attitudes towards WTS in this study) will have a weak influence on an individual's intentions to smoke WTS. On the contrary, what will guide the smoker's behaviour will be the accepted and more common situation (the common practice of shisha smoking during long summer night out with friends), i.e. to intent to smoke a water-pipe. . Another interesting element is cultural tightness, where according to Roccas and Savig (2010), the tighter the culture is (less accepting of self-expression, feelings and preferences), the weaker the effect of personal values on behaviour. With regard to East Asian and African counties (like Egypt), expressing one's thoughts and preferences are less valued (Schwartz, 2006). As such, when it comes to an individual's intentions to smoke shisha, their own personal values can play a weaker role in their decision to not smoke, and therefore will be more likely to intend to smoke shisha.

6.2.2 Socialisation Agents

The second hypothesis (H_2), ***socialisation agents affect attitudes towards WTS***, included two sub hypotheses: (H1a) Peer influence and (H2a) Parental influence.

The findings of this study suggested that: *peer influence has a positive, significant impact on the attitude towards WTS.* Thus, the more favourable the attitude that peers holds towards WTS and its use, the more favourable the youths and young adults' attitudes are towards WTS (and vice versa). On the other hand, *parental influence (mother or father) did not significantly impact youths and young adults' attitude towards WTS.* These findings are in line with prior research that stresses the vital role that peers and close friends have on young individuals (Scalici and Schulz, 2014). Furthermore, it supports prior research that claimed that the older (and more independent) individuals get, the more diminishing the influence of their parents are on their behaviour. The findings of this study put more emphasis and importance on peer influence, giving them a more central role in influencing their decision-making process towards WTS. This study believed that parent's socialisation effects are more effective during early stages of adolescents. The findings of each sub hypothesis are discussed in detail in the next section. The outcomes of this study contradict prior research that claimed that parental and peer influence affected individuals almost equally (De Vries *et al.,* 2003).

6.2.3 Peer Influence

The results of this research supported prior studies, claiming that smoking behaviour of friends (best friendships, social networks, etc.) plays a significant role in influencing attitudes and leading to water-pipe smoking uptake (Maziak, Eissenberg, Rastam *et al.*, 2004; Akl *et al.*, 2015; Singh *et al.,* 2017). Recent research and studies support the notion that peer group identification is important for youth and young adults who put high emphasis on their peer associations. These individuals are more inclined to engage in the same behaviour as their friends (smoking) to gain their group's approval (Nieh *et al.,* 2018). For example, studies conducted in Lebanon and Jordan found that approval and encouragement from friends influenced WTS (Afifi *et al.,* 2009; Obeidat *et al.,* 2014); while the disapproval of friends of WTS was related to less use (Salameh *et al.,* 2014).

Nevertheless, it is recognised that friends may cause unintended peer pressure when mingling. Socialisations among friends operate independently. Socialisations usually lead to reciprocal effects. Accordingly, friends grow more similar together. When individuals spend long hours together with their friends, they may unconsciously mimic their friends' typical routine behaviour and patterns, such as: routines, way of dressing, leisure activities, and smoking behaviour (Ali and Jawad, 2017).

In this current research, results implied that friends enjoy outings that serve shishas. They seek places that offer WTS, especially at weekends, making shisha smoking an essential part of their group gathering. Prior studies indicated that smoking with friends has some psychological associations in the EMR, especially within male groups who hang out daily at local cafes (ahwa). Prior studies indicated that males engage in water-pipe smoking as a sign of manhood and liberation (Akl *et al.,* 2015). Thus, for cafe businesses, it has become a necessary product/service to offer customers. According to reports, cafes and restaurants realise the high net margin associated with shisha smoking. They serve the product everywhere in their stores, ignoring the indoor smoking ban that is initiated by policymakers (Maziak, Ward Soweid and Eissenberg, 2004; Shafey, 2007). The findings of this study also implied that friends who have a negative attitude towards WTS could influence their acquaintances to stop smoking. Among groups with a negative prevailing attitude to smoking, peer influence may discourage uptake of smoking. For example, a group of friends who are influenced, through well executed interventions, to quit

WTS can influence the rest of the group to do so, expressing how unfavourable it may be to the rest of them. Thus, socialising that facilitates smoking can also discourage use.

6.2.4 Parental Influence

In this current study, parental influence was measured in terms of the quality of the parent-youth communication. Based on the outcomes of the pilot tests, the majority of respondents suggested that the "scale of quality of the parent-youth communication" was used separately to measure the effect of youth communication among fathers and among mothers. Most participants admitted that their mothers knew of their smoking habits, but not their fathers. The participants feared their fathers' reactions to such behaviour. Accordingly, the research assessed each parent influence separately. The scale was divided into "Parental Influence-Father" and "Parental Influence-Mother." This separation of parental communication influence was also done in Harakeh *et al.'s* (2004) study. During the data collection, almost 50 questionnaires were removed from analysis because the father section was left empty. This notion from the respondents of this study is not surprising. A prior study among university students in Jordan illustrated that about 30% of water-pipe smokers (more men than women) affirmed that their parents would discipline them for smoking water-pipes (Obeidat *et al.,* 2014).

When conducting the SEM analysis, the variable "Parental Influence – Mother" was dropped from the analysis. Subsequently, the "Parental Influence – Father" was insignificant when tested. These conclusions highlighted a problematic parent-youth communication issue. These outcomes implied that parental influence is insignificant due to the parenting style. Perhaps if parents kept a more open and safe communication about WTS, youth and young adults may be more inclined to listen to their parents' opinions. Studies on anti-smoking socialisation, such as Engels and Willemsen (2004) and Harakeh *et al.* (2005), claimed that youth think that their parents will react in a negative manner if they find out about their offspring's smoking behaviour. However, the parents think they would be able to react to such knowledge in a positive and helpful manner.

Accordingly, this current research observes the findings as an indication that nowadays youth are not spending much time with their parents to allow behavioural effects to occur. This outcome suggests that parents are spending long hours at work, which is due to the requirements of their jobs, the cultures of their workplaces, or the need for money for survival. Thus, life demands

have impacted family time and influence. Harakeh *et al.* (2005) explained that stay-at-home mothers are more positive about their antismoking socialisation practices. Stay-at-home mothers spend more time with their children. Thus, they may have better insights into family matters than the fathers.

The communication process between parents and youth maybe more effective at younger ages, but their influence wears out, as children get older. Findings of this research are in line with past research (Chassin *et al.*, 2005; Ennett, Bauman, Foshee, Pemberton and Hicks, 2001; Harakeh, Engels, Den Exter Blokland, Scholte and Vermulst., 2009) that argued that smoking-specific communication has no effect on adolescent smoking. According to these studies, smoking-specific parental communication was only effective at younger ages. This offers some clarity to why parental influence did not affect Egyptian youth and young adult's attitudes towards WTS in this study. However, it contradicts other studies in tobacco smoking that suggested that parents influence smoking behaviour (Akl *et al.,* 2015; Harakeh *et al.,* 2005; Islam and Johnson, 2005). For instance, Harakeh and colleagues (2005) found that it is useful for parents to discuss smoking-related issues with their offspring in a useful and respectful manner. They explained that the communication process prevents young people from taking up smoking.

6.2.5 Religiosity

The third hypothesis (H3), ***religiosity affects attitudes towards WTS,*** was tested next. In this study, it was found that: *there is an inverse relationship between religiosity and attitudes towards WTS.* This finding suggested that as a person's level of religiosity increases, the less favourable is their attitude towards WTS. This outcome implied that religion and religious institutes are both relevant and important drivers for quitting smoking. These factors create a guarding effect against engaging in WTS. This finding is in line with other prior studies. Past studies suggested that religion and religiosity affect water-pipe smoking (Jawad, Nakkash *et al.*, 2015; Korn and Magnezi, 2008; Nabipour *et al.*, 2016; Singh *et al.*, 2012). However, there are some prior studies that contradict the findings of this study. Some studies found that religiosity had no impact on water-pipe smoker behaviour (Klassen, Smith and Grekin, 2013; Arfeken *et al.,* 2015; MohammadPoorasl, Abbasi-Ghahramanloo and Allahverdipourm 2014). These contradictions mainly stemmed from the belief that WTS is less harmful than cigarette smoking, hence less *makruh* or scorned by religious views.

In this current study, it is important to note that the components of religiosity were related to intrinsic religiosity, which relates to the private, sincere, and emotional practice of religion for the sake of God. The extrinsic religiosity statements that related to being religious for gaining social status and for social appearance were dropped out of the SEM model when tested. This suggests that Egyptian youth and young adults use religion to a certain extent to guide their day-to-day behaviour. Religion is a culturally relevant vehicle. According to the findings of this study, religion can control (discourage) tobacco usage. Egypt is an Islamic country. In Islam, there is a religious declaration (fatwa) by Dar al-Ifta al-Misriyyah (an Egyptian educational institute and government body that represents Islam) that discourages the use of tobacco due to health concerns: *"Don't throw yourself into danger by your own hands..."* (el-Bakara 2/195). Likewise, devoted Egyptian Christians also believe, through the teachings of the Bible and religious entities, that smoking is harmful to one's self and is discouraged (Marcus, 2008).

6.2.6 Attitude towards WTS

The fourth hypothesis (H4), ***attitude towards WTS affects intentions to smoke*** was tested. Results revealed that: *attitudes towards WTS significantly influence intentions to smoke.* Attitudes towards WTS also happen to be the strongest predictor of intentions, a finding that is in line with prior studies of the TPB (Ajzen, 1991; Armitage and Conner, 2001).

In this current study, results suggested: *a partial mediation role of attitudes towards WTS between each of conservation and peer influence and intentions to smoke.* This conclusion supported that there is a significant impact of conservation and peer influence. This means that they remain to have a significant impact on intention to smoke in the presence of attitude towards WTS. The findings of this research indicated that conservation values negatively impact attitudes towards WTS, but positively impact intentions to smoke. This conclusion suggests that although Egyptian youth may create unfavourable impressions of WTS due to conservation values, these values may impact their intentions to smoke, linking WTS to cultural heritage, traditions, and in-group bonding activity. Akl and colleagues (2013) supported this finding. They indicated that peer influence positively influences both attitudes and intentions to smoke, which is evident in water-pipe smoking research and supported earlier in the discussion (in Section 6.2.3).

The findings of this present research found that there is a partial mediation role of attitudes towards WTS smoking between religiosity and intentions to smoke. These results claimed that religiosity does not affect intention directly, but only through the attitude towards WTS, unlike conservation values and peer influence. This finding suggested that an individual's religiosity can play a protecting role in altering attitudes towards WTS, but does not have any direct effect on intentions to smoke. Such results may be explained by earlier studies that found no effect of religiosity on water-pipe smoking behaviour (Arfken *et al.,* 2015; Klassen *et al.,* 2013; MohammadPoorasl *et al.,* 2014).

6.2.7 Perceived Behavioural Control

The fifth hypothesis proposes that (**H_5**) ***perceived behavioural control affects intentions to smoke***. The outcomes of this study suggested that: *there is a positive, significant impact of PBC on intentions to smoke.* In this study, PBC was measured for confidence and controllability over quitting WTS. Thus, these findings suggested that people who have more confidence and control in their ability to quit WTS would have higher intentions to smoke. Prior research supported this finding. Past studies explained that a person's trust in their ability to quit correlates with their shisha smoking usage (Maziak, Ward and Eissenberg, 2004; Ward *et al.,* 2015).

The findings of this current research implied that people who are certain that they can successfully execute a specific behaviour would continue the behaviour until they want to stop. These people are confident in their abilities to quit the behaviour any time they want. They are able to consider factors that may help or hinder quitting. This notion contradicts the basic idea of self-efficacy or PBC that suggested that when a person has more control on confidence in his/her ability to quit smoking, they are more likely to intend to quit (Ajzen, 1991). Other past research supported this study's finding regarding the concept of *"smoking until they feel like quitting".* For example, Israel and colleagues (2003) carried out a study in Egypt on 206 adult male water-pipe users. In their study, they discovered that 21% of the respondents preferred water-pipe smoking to cigarette smoking. The respondents in the study claimed that it was less harmful. They were also confident in their ability to quit.

Interestingly, Israel *et al.*'s (2003) research clarified that around 81–92% of these Egyptian users reported that they knew that water-pipe smoking was associated with fatal diseases, such as lung

cancer and heart disease. However, they continued to smoke. Another study in Virginia, United States found that 80% of water-pipe smokers were confident in their ability to quit WTS, but had no intention to quit (68%). They believed there were not dependent on water-pipe smoking (Smith-Simone *et al.,* 2008). These prior studies' results and other prevailing research (Asfar *et al.,* 2005; Braun *et al.,* 2012; Sutfin *et al.,* 2011; Ward *et al.,* 2007) support the findings of this study that the Egyptian youth feel like they have ability and control to quit shisha smoking. The more confident and able they feel that they can quit shisha smoking, the higher their intentions to smoke shisha, and they believe that they can quit any time they want. As such, they are intending to smoke shisha until they decide it is time to quit.

6.2.8 Subjective Norms

The sixth research hypothesis (H_6) suggests that ***subjective norms affect intentions to smoke***. Through the covariance method that is done in the CFA, the variable "subjective norms" had been excluded from the measurement model to acquire model fit. Thus, the research was not able to test or respond to the research hypothesis. This exclusion of subjective norms from tobacco smoking research is not unusual. For example, a study by Tahmasebi *et al.* (2017), which took place in Iran, found that subjective norms could not predict nicotine dependency among women. Thus, the variable was dropped from the model. Other studies have confirmed the same finding (Lynam *et al.,* 2012; Su *et al.,* 2015; Topa and Moriano, 2010).

Prior research presumed that the effect of the subjective norms' component will be stronger in more collectivist cultures. Nevertheless, the assumption was not proved in Tahmasebi *et al.*'s (2017) study or in this current research. Controversially, Noonan, Kulbok and Yan (2011) argued that subjective norms were found to be significant in their US based study on WTS. Subjective norms were responsible for a slight variation in intention to smoke. Past research also claimed that empirical evidence reported subjective norms regarding WTS as a strong indicator of water-pipe use (Eissenberg, Ward, Smith-Simone and Maziak, 2008; Primak *et al.,* 2008; Smith-Simone *et al.,* 2008).

Based on the literature review, the subjective norms element was the last to be added to the TRA (Fishbein and Ajzen, 1975). According to Armitage and Conner (2001), the subjective norms were thought to be the weakest component by a number of scholars, as well as the weakest

predictor of intentions. According to past research, this shortcoming of the subjective norm component may reflect its weakness in predicting intentions. It may also boil down to its measurement that is usually composed of a single item measure (Armitage and Conner, 2001). Several pieces of research and studies have deliberately removed it from analysis (Sparks, Shepherd, Wieringa and Zimmermans, 1995).

Some scholars have ascribed the weak impact of subjective norms to the way it is conceptualised within the TPB. In the TPB, it fails to capture the dimensions of social influence. Therefore, it is the least predictor of intentions (Conner and Armitage, 1998; Terry, Hogg and White, 1999). Due to these empirical findings found in prior studies and literature, it has been suggested there should be a reconceptualisation of the construct. In this study, the outcomes of other hypotheses and the portrayal of variables such as parental influence and peer influence, have captured the essence of social influence in a way that the subjective norms component might not have; explaining the significant impact that peer influence in particular has on Egyptian youth's WTS behaviour.

6.2.9 Fear of Negative Evaluation

In this study, the seventh research hypothesis (H_7) claimed that ***fear of negative evaluation moderates the relationship between attitudes towards water-pipe tobacco smoking and intentions to smoke***. It was found that: *there is a significant moderation role of FNE between Attitude and the Intention to Smoke.* This outcome implied that youth and young adults crave the approval of their peers and other members of society. They often worry about being evaluated in an unfavourable manner. Therefore, the results of this thesis only reflected the importance of personal image within society among the Egyptian youth. Social pressure may pull individuals towards a specific pursuit or behaviour. Individuals follow their peers to remain loyal to the group. They also follow their peers due to a fear of rejection (being thrown out of the group). Thus, this pressure might lead an individual to take up smoking out of fear that they will be negatively evaluated if they are the only non-smoker among their friends. Not smoking will allow them to appear unsociable within a group of water-pipe smokers.

This outcome of the current research also implied that if the youths' social circle or friends were trying to quit, they would seek to quit as well to belong. They would try to quit because they do

not want to be negatively evaluated as the only smoker within the group. A study in Egypt by Nassar (2003) claimed that the number of women who smoked in their study was underestimated. In the study, women did not want to admit to smoking, creating an issue of underreporting. Nassar (2003) argued that this happened because smoking for women was considered a cultural taboo. Hence, they did not declare their smoking. Another study conducted in the EMR by Akl *et al.* (2015) discussed how smoking a water-pipe can be considered a symbol of manhood. Hence, men who did not engage in WTS among their male friends were judged and pressured to smoke in order to be included within the group.

This outcome of the current research was similar to other studies within WTS research. A cross-country study by Khattab and colleagues (2012), under the name "BREATHE," explained that one limitation to their study was that the interviews were not carried out privately. Hence, it was probable that some of the interviewees who were active smokers claimed that they were not. They denied their behaviour because of: *"fear of negative perceptions or judgements amongst those who could overhear the conversation."* Khattab *et al.*'s (2012) study also declared that the number of women smoking in the investigation was also assumed to be underreported.

6.2.10 Gender Differences

The role of gender was tested in the eighth research hypothesis (H8), ***a moderator of the relationship between the independent research variables and attitudes towards WTS***. The findings showed that: *gender was not found to moderate the relationship between conservation, socialisation agents (peer and parental influence), religiosity, and attitudes toward WTS.* This outcome implied that the gender gap in smoking prevalence is diminishing. Males and females are now smoking at comparable rates, especially when it comes to WTS. In a recent study by Abu-Rmeileh and colleagues (2018), a sample from five Arab countries was collected. The results showed that 34% of water-pipe smokers who participated in the study were females, highlighting the growing number of female water-pipe smokers.

In addition, this finding also implied that there is now a cultural acceptance of WTS, including both genders. The change in societies' customs and behaviour might explain the high percentage of WTS among women (Almerie *et al.*, 2008; Maziak, 2008). Even among traditional communities, Arab societies are more tolerant toward WTS in comparison to cigarettes (Afifi *et*

al., 2013). This can also be due to the process of gender equality, which is creating a declining trend regarding sex differences in smoking. Changes in traditional gender roles may have also influenced the smoking behaviour among both men and women.

This outcome of the current research is supported by Nassar's (2003) findings. Nassar revealed a high prevalence of shisha smoking among males and females in Cairo, Egypt. The research explained how it is a considered a trend among Egyptian females. So, although the WTS gender gap has traditionally been dominated by young males, both in the Middle East (El-Awa, 2010; Harrabi *et al.,* 2011; Mzayek *et al.,* 2012), and Western countries (Chan and Murin, 2011; Primack, Walsh, Bryce and Eissenberg, 2009), this research suggested that this gender gap is shrinking. This outcome of the current research supported the findings of the other prevalence studies that report this outlook (El-Roueiheb *et al.,* 2008; Jawad *et al.,* 2013). The findings of this study implied that the Egyptian society is now accepting female smokers to be prevalent publically. This might have been driven by the media exposure regarding WTS. For example, the media nowadays show images of women smoking as an acceptable and desirable trait. The media also show images that cause the misperceptions of the harms of WTS, allowing the gender-smoking gap to shrink.

In a study by Khalil and colleagues (2013), it was argued that women in Egypt still performed their traditional gender roles and discussed the negative images of women smoking water-pipes. However, based on the current findings of this study, it seems that this view has changed among young Egyptian women in 2017. The findings in this study and other findings of recent studies suggested that there is a shift in cultural norms and female roles in society. Egyptian women's presence in the workforce is evident, claiming high job posts and earning huge salaries. For the first time in Egypt's history, eight women have gained seats in the cabinet, accounting for almost 20% of the cabinet (Al Arabiya, 2018). Similarly, according to Egypt Independent (2018), 18 Egyptian women have been featured in Forbes Middle East's 'Most Influential Women of 2018'. These statistics reflect the changing roles of the traditional Egyptian woman from homes to running ministries and winning international awards.

These gender role shifts in society might have caused a shift within norms and views about women's freedom of choice and behaviour, including smoking behaviour. The media may also

influence women's changing smoking habits; where beautiful, desirable women are featured smoking either cigarettes or shisha. This creates an association between desirability and smoking among the female population. Such images also legitimatise the habit of smoking among women, making it look like an acceptable behaviour. Moreover, as mentioned earlier, misperceptions regarding WTS as being less harmful than cigarette smoking might have contributed to this decreasing gender gap. For example, Egyptian female water-pipe smokers reported that they preferred water-pipe smoking because they considered it to be much less dangerous than cigarette smoking (Labib *et al.*, 2007).

6.3 Conclusion

The focus of research in the fields of tobacco, health, and consumer behaviour has recently been on the growing phenomenon of WTS. The proliferation of smoking using a water-pipe has urged further research on WTS to fill in the existing gaps in the literature. WTS behaviour continues to grow, targeting vulnerable segments of societies, such as the youth and women. Directing research efforts towards WTS is also needed to aid social marketers and policymakers. With valuable insights regarding this matter, practitioners can create more effective social marketing efforts and interventions, which help curb this epidemic. As such, this empirical study focused on understanding how personal values, socialisation agents and individual religiosity shaped consumer behavioural responses that are associated with WTS, while examining the moderating effects of gender and FNE.

This current research highlighted the importance of conservation values, peer influence and religiosity in shaping individuals' attitudes towards WTS. According to this study, both conservation values and religiosity are considered safeguards against WTS. Egyptian youth and young adults who value societal norms and personal and societal stability are more inclined to develop unfavourable attitudes towards WTS. Religiosity also plays a protective role against WTS. Individuals with higher religiosity view WTS as harmful. Therefore, it is frowned upon according to religious rulings. These religious views are present among both orthodox Egyptian Muslims and Christians. Hence, this finding is central to understand when developing WTS interventions aimed at Egyptian youth and young adults. Accordingly, conservation values and religious intrinsic ideals may be emphasised throughout social marketing efforts and interventions, possibly influencing water-pipe smokers' attitudes.

In line with past research in smoking and other social behaviour, this present thesis emphasised the crucial role of peer influence in shaping individuals' attitudes towards WTS, and their intentions to smoke. According to the findings of this research, Egyptian youth and young adults are more likely to develop a positive outlook regarding WTS if their peers are water-pipe smokers. Furthermore, peer influence will allow youth and young adults to have higher intentions to smoke shisha. In this study, parents had no significant influence on Egyptian youths' attitudes or intentions. This is lack of influence can be due to the older age bracket that this research studied, in comparison to previous studies of WTS across the EMR. Parental influence might also be weak in weight because of the method by which Egyptian parents communicate with their offspring about WTS. Thus, this study expressed that if parents have open and constructive communication style, they may be more effective in influencing their offsprings' WTS behaviour.

When discussing predictors of intention, only attitudes towards WTS and PBC were significant contributors to intentions. The attitude towards WTS was the strongest predictor of intentions to smoke. However, PBC suggested that Egyptian youth who felt that they are confident and in control of quitting WTS will have higher intentions to smoke. These youths feel that they can quit any time they want. The empirical findings that emerged in this thesis provided conclusions that are crucial for the design and implementation of social marketing campaigns and interventions that are created for WTS cessation. Such outcomes highlighted the differences between WTS and cigarette smoking behaviour. Therefore, water-pipe smokers may respond differently to behavioural interventions.

In this current thesis, gender was not found to be a moderator in WTS behaviour. The findings did not indicate any differences in responses regarding the gender. This implied that the gender-smoking gap among Egyptian youth and young adults is shrinking. Accordingly, WTS is now acceptable among Egyptian female smokers. These results suggested that Egyptian women should be addressed equally as men in all social marketing efforts and interventions that are designed for WTS cessation.

Another moderator that was considered in this study was FNE. This study's results found that FNE moderated the attitude-intention process. This implied that Egyptian youth and young adults worry about being unfavourably evaluated by their significant others and various social

groups. This distress affected how their attitudes towards WTS can influence their WTS intentions. This conclusion represents the Egyptian culture that is collectivist in nature. Thus, individuals tend to put higher emphasis on other people's evaluations of them.

In this chapter, the findings of this research discussed the factors that influence Egyptian youth and young adults' attitudes towards WTS. The next chapter of this thesis provides a conclusion. The objectives of this study are revisited and explained. Furthermore, a number of theoretical and practical contributions are considered based on the emerged evidence of this study. The limitations of this study and direction for future research are also presented.

Chapter Seven

Conclusion and Recommendations

Chapter Seven

Conclusion and Recommendations

7.1 Overview

The notion behind this research stems from the prevailing presence of WTS among the youth and women, especially in the EMR (Jawad *et al*., 2014; Jawad *et al*., 2018). The popularity of WTS has spread across the Eastern region, and also across Western countries (Maziak *et al*., 2015). With the global rise of WTS, social and health research have been calling out for continuous monitoring of this growth. Research is needed to evaluate the factors causing these smoking preferences and to undermine the effects of this epidemic, especially in countries like Egypt where it is endemic (Abu-Rmeileh *et al*., 2018; Jawad *et al*., 2018; Kheirallah *et al*., 2016). Prior research argued that youths' WTS behaviour might be subject to local perceptions and beliefs that also intertwine with local culture. For this reason, further investigation is required, using variables measured at individual consumer level (Kheirallah *et al*., 2016). This study seeks to understand the factors that influence WTS among Eastern Mediterranean youths, specifically in Egypt.

This chapter presents the conclusion of the current study. The research aim and objective are revisited first, explaining how they were addressed. Subsequently, the main findings are discussed, introducing the final model developed. This chapter afterward presents the theoretical contribution made by this study, and how it advances current knowledge. The chapter finishes by reviewing some of the limitations faced during the research, and considers potential paths for future research. Figure 7-1 illustrates this chapter's outline.

Figure 7-1: Conclusion Outline

7.2 Addressing the Researchable Questions and Research Objectives

The aim of this thesis is to better understand the factors affecting WTS among EMR youth and young adults, specifically in Egypt. As such, the researchable question of this study was to understand "how do an individual's peers, family, personal values, and level of religiosity shape their attitudes and intentions towards WTS and how do gender and the FNE affect these relationships?"

In order to achieve this aim and answer this researchable question, several objectives were developed in Section 1.4. These objectives were met throughout the course of this study. The following points revisit each research objective, and how it was addressed in the thesis:

Research objective 1: Provide a critical review and identify gaps in the literature related to WTS, and social marketing as a tool for combating smoking behaviour

In response to objective one, the first part of the literature review (Chapter 2) provided an extensive overview of smoking, specifically WTS and its prevalence; as well as the use of social marketing efforts as a mechanism for promoting WTS cessation. Reviewing prior studies aided in fully understanding WTS and its practice. It illustrated the main drivers behind WTS and various key players and mechanisms involved in its cessation. The review also helped illustrate how social marketing efforts, which are more cost and time efficient than other methods of WTS cessation, were used to fight other social and health related problems, such as tobacco smoking. Thus, research objective one was attained.

Research objective 2: Integrate behavioural theories and individual-level constructs in order to develop a conceptual framework that examines the factors that influence WTS

Objective two was addressed throughout the second part of the literature review, which outlined the theoretical background and hypothesis development (Chapter 3). Various social and health theories were studied and considered for the current study, such as: the health belief model, trans-theoretical model of health behaviour change, social cognitive theory, integrative model of behavioural prediction, value-belief-norm theory. This thesis focused on integrating the most suitable theories that would meet the research questions, and examine their impact on WTS. The theories used in this study were: the TPB, the theory of basic values, and other theories of socialisation and individual-level constructs (religiosity and FNE). With the acquired knowledge, the research constructed a proposed model to measure the factors that influence consumer WTS among the youth and young adults. This addressed the second objective of this research.

The factors that form the proposed model include: conservation, openness to change, the influences of socialisation agents (such as peers and family), and individuals' religiosity. These factors shape consumers' attitudes and behavioural intentions towards WTS. The influence that attitudes, subjective norms, and PBC have on behavioural intentions is assessed. The proposed model also includes a moderating role of the FNE in the relationship between attitudes towards WTS and intentions to smoke. Furthermore, the moderation role of gender is considered in the

relationship between personal values, socialisation agents, religiosity, and the attitudes towards WTS.

Research objective 3: Develop an appropriate research methodology to collect and analyse data to address the research question

The third objective of this study was to *identify the most appropriate methodological choices that aid in testing the proposed model*. This objective was addressed after the completion of Chapter 4. Accordingly, this thesis adopted a positivistic philosophical stance to conduct the current research. The purpose of the study was descriptive in nature, following a quantitative research approach through an administered questionnaire. A pilot test was steered before the actual data collection. Through the piloting stage, the questionnaire was tested with the help of the preliminary focus groups to assess various scales obtained for the study.

The studied population was youths and young adults in Metropolitan cities in Egypt (Cairo and Alexandria) who smoked using a water-pipe. The sampling method was non-probability. Due to a lack of a sampling frame, this study used purposive sampling, with the use of quotas that allows a representation of the population. The data was gathered just one time, over a period of three months (June, July, and August 2017).

Research objective 4: Empirically examine how conservation, openness to change, socialisation agents (peers and family), and individual religiosity affect consumer's attitudes towards WTS; and the role of FNE and gender in moderating the relationship between the consumer's attitude towards WTS and their behavioural intentions to smoke.

The fourth objective intended to test the constructs under study which was undertaken in Chapter 5. Data analysis had been conducted, using SEM for testing the effect of the independent variables on the dependent variable. Results had been obtained using AMOS – version 23. *Based on the analyses, not all the hypotheses were supported. Furthermore, some of the hypotheses (H1a and H6) were not tested as they dropped out of the measurement model and the structural model in order to aquire model fit.*

Table 7-1 illustrates the results of the hypotheses that were tested. According to the findings that emerged during the analyses, there are significant effects of conservation, peer influence, and

religiosity on Egyptian youths and young adults' attitudes towards WTS. Results also showed a significant effect of both: attitude and PBC on the intention to smoke. In addition, FNE was found to significantly moderate the relationship between attitude towards WTS and the intention to smoke. Due to these analyses, a research model was constructed (See Figure 7-2 in Section 7.3).

Table 7-1: Research Outcomes

Hypothesis Number	Construct	Hypothesis	Relationship Direction	Relationship Significance	Result of test
H1	Personal Values	**H_{1a}:** Openness to Change affects attitudes towards water-pipe tobacco smoking	Not Tested (Dropped from model)		Partially supported
		H_{1b}: Conservation affects attitudes towards water-pipe tobacco smoking	Negative	Significant	
H2	Socialisation Agents	**H_{2a}:** Peer Influence affects attitudes towards water-pipe tobacco smoking	Positive	Significant	Partially supported
		H_{2b}: Parental Influence affects attitudes towards water-pipe tobacco smoking	Positive	Not Significant	
H3	Religiosity	Religiosity affects attitudes towards water-pipe tobacco smoking	Negative	Significant	Supported
H4	Attitudes towards WTS	Attitudes towards water-pipe tobacco smoking affects the intentions to smoke	Positive	Significant	Supported
H5	PBC	Perceived behavioural control affects intentions to smoke	Positive	Significant	Supported
H6	Subjective Norms	Subjective norms affect intentions to smoke	Not Tested (Dropped from measurement model)		

Hypothesis Number	Construct	Hypothesis	Relationship Direction	Relationship Significance	Result of test
H7	FNE	Fear of negative evaluation moderates the relationship between attitudes towards water-pipe tobacco smoking and intentions to smoke	Negative	Significant	Supported
H8	Gender	Gender moderates the relationship between the research variables and attitudes towards water-pipe tobacco smoking	-	Not Significant	Not Supported

Research objective 5: Critically discuss findings of current research, and compare them to prior findings within the literature.

The final objective aimed to analytically discuss the findings of the empirical study, providing a critical comparison of the current findings of this research with prior findings within literature and clarifying the results implications. This objective was addressed through Chapters 6 and 7. Overall, WTS is a common practice in Egypt among the studied population. Peers, conservation values, and the protective role of religiosity influence this smoking behaviour. Moreover, Egyptian youth and young adults, regardless of gender differences, develop intentions toward WTS due to perceived behaviour control and attitudes towards smoking. Fear of negative evaluation moderates WTS behavioural responses among smokers.

In fulfilment of the final objective **(Research objective 6)**, the following sections in the current chapter will address the research recommendations, contributions, limitations, and areas for future research.

7.3 Summary of Contributions to Knowledge

The current research incorporates theories of social behaviour and personal values, as well as individual level constructs in order to develop a framework to better understand the factors that

influence WTS among Egyptian youths and young adults, aiding social marketers and public policy makers in combating this epidemic. When reviewing the literature, various gaps in knowledge were noted; prospects for contributing to existing bodies of knowledge within several areas in the literature. Due to these existing academic gaps, this study was conducted. This study developed empirical evidence to fill in these gaps.

This research aimed to develop insights to understand how personal values, socialisation agents, and individual religiosity influenced WTS behaviour, with the moderating role of the FNE. This current study has contributed to knowledge through four key areas that are summarized in the following five points: (1) the study's focus on Egypt as the main area for research contribute to the empirical research within WTS and social marketing research; where less attention was given despite the prevalence of WTS in this country; (2) both personal and socio-cultural values systems were investigated and their findings highly contribute to various areas of research that were argued to need more examining; (3) integrating individual level constructs that were not highlighted in WTS research provided more explanation of WTS behaviour among Egyptian youth and young adults; (4) contributing to social marketing literature and strategy by highlighting the various elements that influence WTS behaviour among Egyptian youth and young adults, given the absolute lack of focus of social marketing practices that are designed to curb WTS; (5) investigating the age segment under study contributes to WTS and consumer behaviour literature as it is in need of further research; and the study's findings can help in tailoring strategies and programs for WTS cessation programs.

The proposed model highlighted in Figure 7-2 is this study's *main* contribution to the body of knowledge within many fields of research, including water-pipe tobacco research, social marketing, consumer behaviour and others. The following points further explain the key areas where this study has contributed.

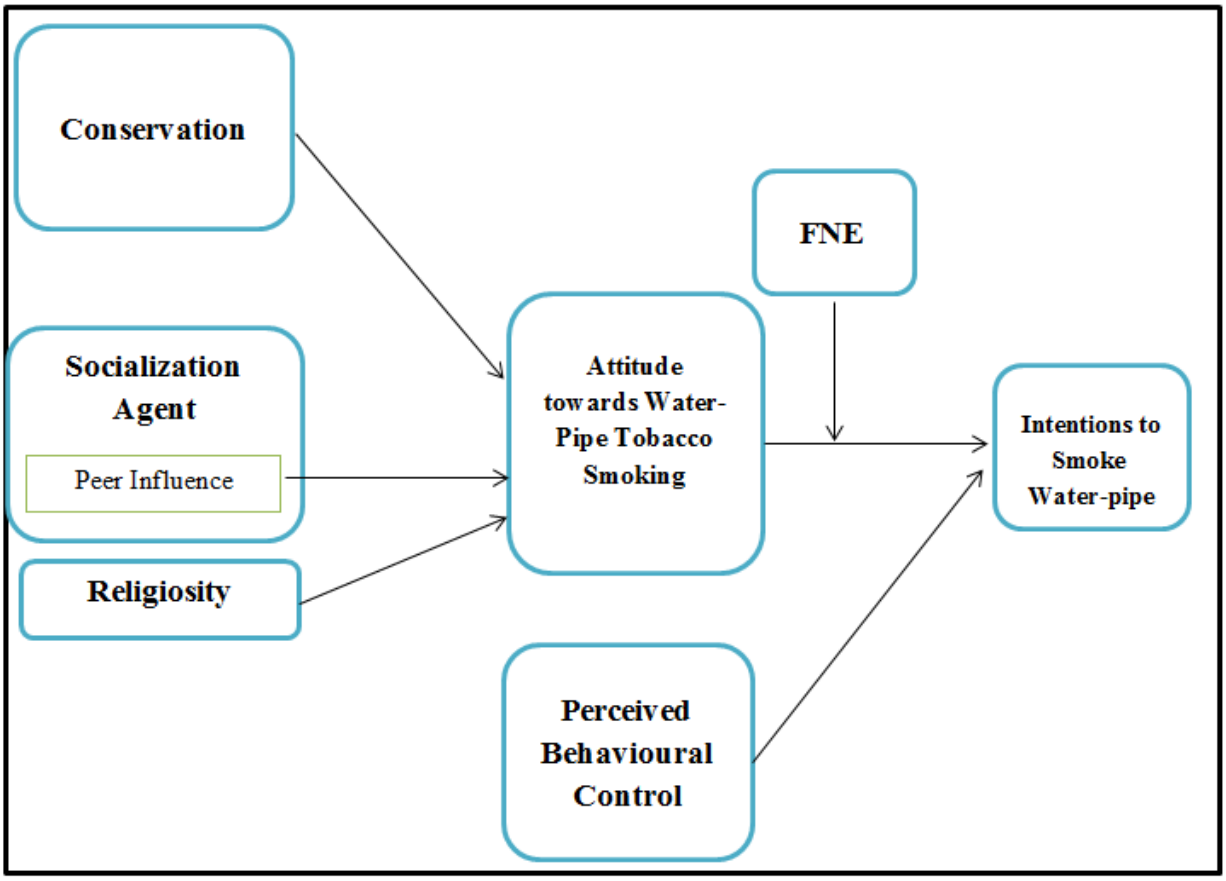

Figure 7-2: The Final Proposed Model

Social Context – Focus on Egypt

Prominent research and reviews within the WTS field have acknowledged the need for more research, as literature is limited (Abu-Rmeileh *et al.*, 2018; Jawad *et al.*, 2018; Kheirallah *et al.*, 2016). After conducting this research, this thesis contributed to WTS literature in varied ways. For instance, this thesis provided more insights into WTS behaviour. It provided a bird's eye view on the main factors that contribute to WTS in the EMR, specifically in the ***Egyptian context.*** The chosen focus of this study was Egypt. WTS is considered prevalent in Egypt (Kheirallah *et al.*, 2016). Moreover, recent studies show that Egypt has the highest level of water-pipe, cigarette, and dual-smoking smokers (Abu-Rmeileh *et al.*, 2018).

Thus, a country like Egypt has immense need for WTS interventions and social marketing efforts. However, compared to countries within the EMR, like Syria and Lebanon, Egypt has received less attention within empirical WTS research. It is also important to highlight that other studies that took place in Egypt revealed different results than from those that were conducted in

the EMR and other Arab countries (Abu-Rmeileh *et al.*, 2018; Khalil *et al.*, 2013). For example, it is clear from the findings of this study that the protective values, such as conservation values and religiosity, played a stronger role in influencing Egyptian youth and young adults' WTS. However, other studies in WTS behaviour highlighted the influence of hedonic values that focus on pleasure and entertainment, as well as self-expression (Akl *et al.*, 2015). For these reasons, this study contributed to WTS literature, focusing on better understanding of consumer responses associated with WTS in Egypt, which extends the academic knowledge of WTS research in the EMR and aids practitioners in constructing WTS interventions and social marketing efforts.

Contribution to Theory and Literature

The proposed framework of this study provided a ***contribution to the theories and constructs integrated within the framework*** by investigating two value systems of water-pipe smokers: a personal value system and a socio-cultural value system. With regards to personal value systems, the incorporation of the refined theory of basic values by Schwartz *et al.* (2012) added to the individual values literature. For example, this study provided an understanding of the main values that guided water-pipe smokers' smoking behaviour. Such information added more insight into consumers' smoking behaviour. The refined theory of basic values by Schwartz *et al.* (2012) has never been explored within WTS research, so this study contributes to WTS literature with new findings that can help with WTS cessation by influencing those values that help curb WTS among Egyptian youth and young adults.

In addition, investigating personal values of Egyptian smokers' highlights how these values differ from other countries and cultural backgrounds, allowing a theoretical comparison of values within literature. With these conceptions and understandings, it can pave guiding paths for further research. With the integration of theories within the framework, this research was able to extend the existing body of knowledge regarding the TPB. This research provided empirical evidence that TPB is an applicable theory that can explain and predict WTS behaviour. Similarly, socio-cultural value systems have also been explored as this study contributes to consumer socialisation literature. It highlighted the influential role of the socialisation agents under study – mainly peer influence, and how they contributed to smoking behaviour. It also sheds some light on the lesser influence of parents on WTS behaviour among youth and young

adults, and if social marketing strategies can create ways in which parents can be incorporated in social marketing interventions to become change agents in curbing WTS.

This study extended the TPB by ***integrating individual level constructs,*** both of which reveal interesting findings that are unique to WTS research. This study added individual religiosity within the TPB. Religiosity proved to be substantial to the research at hand; highlighting the protective role that religiosity plays within WTS behaviour. Moreover, the notion of examining the role of the FNE within this context was never applied before in prior studies. Accordingly, this study added the variable in the proposed framework, discovering significance in impact, and providing new comprehensions in both FNE and WTS literature. Findings of FNE highlight the role of social approval and security and the fear of being unfavourably appraised among Egyptian youth and young adult water-pipe smokers.

Such outcomes add to WTS research as well as aiding social marketing researchers in further developing their models and strategies when designing social marketing interventions in Egypt and the EMR. Findings of this study added insights regarding the role of gender – specifically behaviour within WTS literature. This study provided evidence that emphasises the changing roles of gender within the EMR region and the acceptance of WTS within this region (Afifi *et al.*, 2013; El Awa *et al.*, 2013; Mostafa, Houssinie and Fotouh, 2018). This study established that the gender gap is shrinking concerning WTS behaviour, where it was once considered a male dominated activity.

Social Marketing Focus on WTS

Although there are many anti-smoking social marketing efforts that have been examined and documented in literature, there is a lack of focus on WTS as an epidemic that threatens many societies. There is also insufficient research on the ways in which social marketers can help in WTS cessation. Some studies that were reviewed in the literature recognised that some of the tactics used for cigarette smoking cessation are not effective with water-pipe smokers. Hence, the final model proposed in this study contributed to the ***social marketing literature*** that has been moving away from mainstream social marketing concepts and towards including various disciplines that reshape the way social marketing can be conceptualised and practised.

This study identified the main factors that can be integrated within tailored social marketing campaigns to create effective interventions targeted at youths and young adults. This research draws from various disciplines of marketing, psychology, sociology, as well as health and tobacco research. The outcomes of this study agree with Gordon's (2012) research that was discussed earlier in Section 2.3.1, which added additional factors to the mix: socio-cultural and personal or individual level influences. Thus, the outcomes of this research can help WTS cessation, applying Gordon's (2012) proposed social marketing mix (as shown in Figure 7-3).

The outcome of this study supports that socio-cultural influences need consideration in the creation of a social marketing mix for WTS interventions. The outcomes of this research clearly illustrate how peer influence shapes smoker's responses that are associated with WTS. Peers are part of the environment in which the consumer is present, and where the social marketing operates (*circumstances*). Furthermore, this study found that one of the social costs of engaging in WTS is the fear of being unfavourably evaluated by others. Hence, FNE is an important element in the *cost* ingredient of the mix. In conclusion, socio-cultural influences contribute to the *process* ingredient of the mix.

The outcome of this study supports the idea that personal influences need consideration in the creation of a social marketing mix for WTS interventions. The findings of this study highlight the important role of the individual level constructs, such as personal values and religiosity, in shaping WTS behaviour among smokers. Thus, it is significant to add them as *consumer's* personal influences. Although researchers and scholars of social marketing argue that efforts should move beyond downstream marketing, it nevertheless makes it no less important to include it in social marketing intervention design. Due to the lack of any proper social marketing practices associated with WTS cessation in Egypt, it is imperative that downstream marketing efforts are included as well as midstream and upstream. Section 7.4 further illustrates how this research's findings contribute to midstream and upstream marketing (mainly in the *organisation, competition* and *channels/strategies* elements).

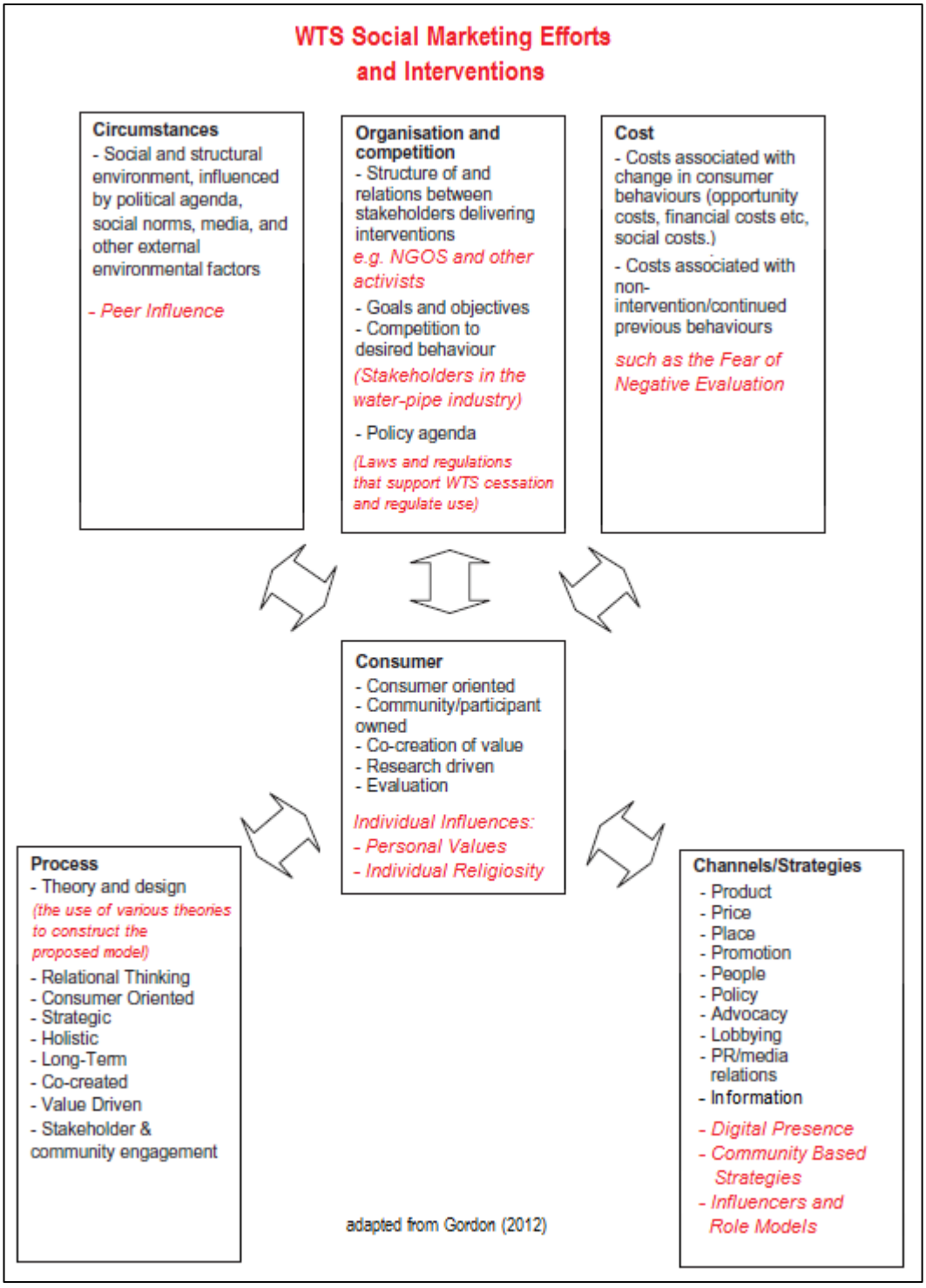

Figure 7- 3: Social Marketing Mix - Adapted from Gordon (2012)

As part of strategy design, social marketers should differentiate between various behaviours when planning and executing a social marketing campaign. Andreasen (2003) discussed how

influencing different social behaviors depends on the kind of behaviour and response that is being promoted. For example, promoting smoking cessation may be considered an individual behaviour, but promoting family planning involves more than one person, with different views to tackle in a social marketing strategy. As such, the existence of other intermediating factors might impact or distort the reach of the message (Andreasen, 2003). Hence, the findings of this study add to the academic body of knowledge within social marketing by highlights the factors (peer influence, individual religiosity, conservation values, attitude towards WTS, PBC and FNE) that should be taken into consideration when planning the social marketing intervention strategy and design of WTS cessation programmes.

Effective social marketing strategies require suitable message design. Thus, this study adds to the academic knowledge on the significant elements that aid in designing the right communication message. Based on the empirical evidence of this study, it is essential to craft the right messages for the right audiences, which in this study's case are the youths and young adults. According to the findings of this study, these messages can illustrate how shisha smoking can affect personal and societal stability; can damage the health, which is against common religious beliefs; can isolate an individual out of group activities that do not involve shisha smoking; or can for instance leave an individual out of a relationship where the partner is not a smoker or thinks this habit is unattractive.

Age Segment

This thesis also found a gap in literature regarding WTS studies that were conducted on youths and young adults. Most studies focused on younger age segments where WTS initiation occurred. However, Jawad and colleagues (2014) argued that more research is needed to understand the changing paradigm of WTS epidemiology into adolescence and adulthood. Moreover, WTS research indicated that youths and young adults had the highest water-pipe smoking rates (Jawad *et al.,* 2018). Hence, this study contributed to WTS literature by studying ***youths and young adults*** WTS behaviour, providing further understanding of what influences such behaviour. The focus on this age segment provides social marketing researchers and practitioners with data that can help them in segmenting and targeting water-pipe tobacco smokers as well as designing intervention programmes and campaigns that can effectively reach them and appeal to this segment.

Findings of this study also provide numerous managerial contributions for practitioners that will be highlighted in the next section. The practitioners addressed in this study include: governmental policymakers, educational institutes, social marketers, and the media.

7.4 Managerial Implications

The empirical evidence presented in this thesis clarified the major social and personal factors that influence youth and young adults' intentions towards WTS. These findings can aid social marketers and policy makers into taking steps and developing interventions that will lower the levels of WTS. However, it should be recognised that in collective cultural societies, like Egypt, WTS prevention programmes should involve several key stakeholders such as: the government, schools, family, community members, and the media (Islam and Johnson, 2005; Lopez *et al*., 2017). Accordingly, this study addresses suggestions for: the governmental policymakers, educational institutes, social marketers, and the media. A summary of the practical implications is provided in Table 7-2.

Table 7-2: Practical Implication for Key Stakeholders

WTS Intervention Tactics/Key Stakeholders	Recommendations
Policies and Regulations	Regulating Premises, Warning Labels
Governmental and non-governmental organisations (NGOs)	Egypt's Ministry of Health, Ministry of Social Solidarity NGOs such as Misr El Khier, Caritas-Egypt
Educational Institutes	Schools, universities
Social Marketers and Media Planners	Includes target market considerations, message content, and various channels of communication

The nature of WTS and the setting in which people engage in WTS is different from cigarette smoking. Hence, strategies designed to battle WTS should take this into consideration when designing interventions aimed at lowering WTS or cessation. Researchers have argued that the *"one-size fits all"* conventional tobacco cessation frameworks are inadequate in order to curb epidemics (Khierallah *et al.,* 2016). Therefore, this study provides some recommendations for key stakeholders in the paragraphs that follow.

7.4.1 Governmental Policy Makers: Egypt has approved the World Health Organization Framework Convention on Tobacco Control (WHO FCTC, 2005). However, existing tobacco

policies are generally concerned with regulating cigarettes, with little emphasis on other forms of tobacco products, such as water-pipe (Jawad *et al.,* 2014). The water-pipe tobacco industry operates relatively freely. These premises might serve customers that are under age (less than 18 years old), undermining tobacco control policies, and facilitating WTS among Egyptian youth and young adults. According to the findings of this research, more than half of the respondents involved in this study (52.5% collectively) have started smoking shisha at the age of 18 or less. Therefore, there is a considerable opportunity for better legislation and regulation to limit its harm. For example, ***water-pipe serving premises*** (whether café, bar or restaurant) should be under routine surveillance by local government. WTS can also be regulated in places where families gather around. Restricting this behaviour in arenas made for families will reduce the consciousness of children to this activity, and denormalise it. Thus, children will not have frequent acquaintance with WTS and will not be exposed to second-hand smoking. Results of this study find that individuals who value conservation (such as retaining a sense of belonging) are less inclined to hold positive attitudes towards WTS. Findings also show that creating an unfavourable attitude towards WTS results in less intention to smoke water-pipes. Hence, by employing these regulations, they would help address issues related to the conservation values that can play a protective factor against WTS as discovered in this study, and also influence how attitudes towards WTS are shaped.

Product packaging is an important aspect that needs careful consideration and regulation. Water-pipe tobacco packaging, as well as the accessories of water-pipe smoking, does not routinely display adequate or relevant social/health warnings, compared to cigarettes. This is non-compliant with the packaging requirements of the WHO-FCTC. Prior research also suggested that graphic-based health warnings were more effective than text-only messages (Mohammed, 2013). Hence, warning label content, the placement of warning labels, and the package design are important to consider for WTS cessation (Lopez *et al.*, 2017).

Thus, social marketers who are involved in WTS cessation campaigns can design interesting and effective packaging that informs smokers of the social/health harm of WTS. Some examples of these social and health warnings were illustrated in Section 3.2.2. However, these package warnings should not only express health issues, but also social and environmental issues. For example, the findings of this study show that conservation values, such as societal and personal

security can influence how smokers shaped their attitude towards WTS, making them less inclined to smoke. As such, these warning can include messages and images around these values in order to promote WTS cessation. The message and image content of these warnings can specifically include value-expressive concepts such as "feelings of belonging, maintaining healthy and happy relationships with significant others, respecting social norms that dismiss water-pipe smoking" and so forth. Moreover, other findings of this current research can be used for these warnings to include the effect of peers, and unfavourable evaluations by social groups that can be the result of WTS. As such, more youth-appealing messages such as "Nobody likes a smoker!" or "Unpopular opinion: shisha makes you less sociable" can tap into their FNE and peer associations, highlighting how water-pipe smoking is not a favourable habit.

As noted, these warnings should not only be placed on tobacco packs, as these packs are not viewed by water-pipe smokers when they are being served shishas at cafes and bars. Warnings should also be placed on the apparatus itself and its various accessories (such as the hose and coal holder). This policy should also be considered for the venues that serve shisha as well.

Governmental healthcare professionals that work under the Ministry of Health and Population, as well as ***nongovernmental organisations (NGOs)***, can effectively provide information and advice, particularly on termination of water-pipe usage. According to pior research, there are various common misconceptions regarding shisha smoking, such as it being healthier and more socially acceptable than cigarette smoking. Thus, healthcare professionals and other NGOs can create country-level intervention programmes that are designed and targeted at Egyptian youths and young adults to create consciousness about the dangers of WTS, clearing the various misconceptions that exist and influencing attitude created towards WTS. The tactics used in these campaigns must be appealing to the younger segment of society, and can involve the use of social media platforms, testimonials and influencers that appeal to this segment. Thus, based on the findings of this study, the content could highlight the negative effects of peer smoking, stress conservation values, the role of religion, and capitalise on the idea of being unfavourably evaluated by significant social groups among targeted individuals.

7.4.2 Educational Institutions are considered an essential player in WTS cessation. Schools, universities, and other educational foundations are where young individuals spend most of their

time, and where they can be exposed to different influencing factors of smoking. Hence, these institutes can create on-campus social marketing campaigns that include seminars and inspiring talks (like TEDx talks where past smokers of shisha can share their experiences and challenges of quitting, tapping into water-pipe smoker's perceived control over their smoking behaviour). In addition, eye-catching marketing material (such as rollups, videos, banners, etc.) can be created and publicised to educate young individuals about the physical and social harm of engaging in WTS. These marketing materials can be used and tailored to different age segments.

According to this current research, various forms of behavioural interventions, such as group sessions can be helpful in utilising positive peer influence. Here, non-smoking friends can influence their smoking friends. In this study, it was found that peer influence is a significant forceful element. Furthermore, this study showed how individual religiosity can alter a person's attitude towards WTS by acting as a protective factor against it. Thus, younger religious figures who are known for their reasonable and sensible spiritual thoughts can be involved in these on-campus initiatives. They can inspire students to take a healthier and more positive attitude towards a smoke-free life.

7.4.3 Marketers and Media Planners: The focus on audience is a basic principle of social marketing. Hence, shaping the Ps of the social marketing mix and tailoring campaign messages with the target audience in mind is essential for a more effective result (Daniel *et al.,* 2009). Below are some tools and tactics that marketers and media planners can implement in order to design a more effective social marketing intervention for WTS cessation.

- *Marketing Strategy – Segmentation, Targeting and Positioning:* Prior research in social marketing and other studies in pro-social behaviour demonstrated the imperative role of segmentation and managing social marketing tactics and communication according to different consumer clusters (Alamanos *et al.*, 2013, Hart and Robson, 2017). Findings of this current research found no gender differences when it came to WTS attitude creation. This suggests that the gender gap regarding WTS is shrinking, and as such, these campaigns should be targeting females as much as males and including them in the message content.

Similarly, social marketers and other entities involved in creating WTS interventions have to consider the different consumer groups when communicating. It is important to note that Egyptian youth and young adults were this research's main target market, while the study did not aim to identify other segments. However, prior research (Islam and Johnson, 2005; Lopez *et al*., 2017) suggests that other social groups surrounding this target market should also be involved in the social marketing efforts that are designed for WTS cessation. Families, siblings, and community adult members should understand the destructive influence their water-pipe smoking behaviour has on their youth. It is imperative to communicate with parents and families, as well as the youth about the harm of WTS (Islam and Johnson, 2005; Lopez *et al*., 2017). According to this study, most youths and young adults did not believe that their parents influenced their attitude towards WTS, or their intentions to smoke water-pipes. A lot of the respondents in this study did not communicate with their parents about WTS. Hence, this study concluded that there are communication issues between parents and their offspring. It is suggested that parents are educated regarding how to promote open, trusting, and constructive communication. They can follow a socio-oriented concept in their communication style, allowing their offspring to be more eager in communicating with them without fear. This can be achieved through engaging them in WTS awareness and prevention programmes.

- *Social media:* Findings from previous studies support that social media must be used to counterattack shisha-promoting messages, and de-normalise the prevalence of shisha smoking (Taleb *et al.,* 2018). As this current study investigates WTS among Egyptian youths and young adults, it is argued that using popular platforms that are constantly used by this age segment, such as Instagram, Facebook, Twitter, YouTube, Tumblr and others can help support awareness campaigns and strengthen the effect of the messages communicated. As mentioned in the sections above, social media platforms are the places where the youths and young adults spend most of their time interacting with people. As findings of this present research highlight the importance of social influence and acceptance, these social media platforms can be used for interaction, for engagement and for the campaign's influence to occur. These platforms can create group discussions and affirm WTS cessation thoughts that are needed to influence attitudes and intentions associated with WTS. Some tactics by the American non-profit tobacco control

organisation, *The Truth*®, are proven to work over years of empirical study. Social and health marketers should study this example as a worthy model for targeting Egyptian youths and young adults (Truth Initiative, 2018).

7.4 Research Limitations

There are several limitations to this study. However, these limitations do not render the findings any less significant, but provide gateway for further research in this area. The proposed conceptual framework was constructed on ***WTS***, neglecting other means and mechanisms of smoking. Accordingly, the results cannot be generalised to other smoking methods, such as cigarettes or pipes. The researcher investigated ***specific determinants*** that shape consumer's attitudes and behavioural intentions towards WTS. This study sought to understand how personal values (openness to change/conservation dimension value), socialisation agents (peers and parents), and an individual's religiosity shape consumers' attitudes and behavioural intentions towards WTS, with the moderating role of gender and FNE.

Thus, when developing the proposed conceptual model, certain variables were considered, while other variables were ignored. This study did not assess all personal values that exist among individuals, e.g. self-enhancement-self-transcendence dimension, and other social agents or institutes that play a role in shaping one's judgements (e.g. significant others, siblings). There could also be other moderating variables that are significant to study, such as health considerations, external resources, and barriers that affect WTS behaviour. These disregarded variables could have played an influential role in the current study. The TPB's beliefs were not measured as part of the model. The current thesis relied on the main elements of the TPB for predicting WTS attitudes and intentions.

When discussing the research methodology, the study faced several limitations. Regarding the selection of the target population, this study ***focused on Egypt***, neglecting the other MENA, Arab nations, and other EMR that contain high rates of WTS. When selecting the sample from the target population, the research focused on two governorates, ***Cairo*** and ***Alexandria***, which were the two largest metropolitan cities in Egypt. However, this study neglected collecting data from other cities in Egypt, making the emerged results not generalisable among the whole nation or among other cities. When collecting the data from Cairo and Alexandria, the study used **non-**

probability sampling. The data was not proportionately gathered from the governorates. Furthermore, this study focused on **youth and young adults,** neglecting other age groups that are found in the cities, and hold higher rates of smoking behaviour. Nevertheless, this may have limited the variation in the study.

This study was ***cross sectional*** in nature and failed to capture the dynamic nature of consumer behaviour, causing another limitation to surface. Additionally, this study followed a ***quantitative research approach***, through distributing administered questionnaires. This approach did not answer questions about how/when/why the variables (personal values, social agents, religiosity, and gender) occurred or shaped consumer's attitudes and behavioural intentions towards WTS. Rather it addressed the "what" question (what were the factors of the situation being studied?). The main goal of this type of research is to describe the data and characteristics about what was being studied. Therefore, the study failed in further understanding the motives and explanations of the occurrences. This limited the mode of evidence developed. This study relied on data that was self-reported. Prior studies indicated that although self-reporting is the most common method used in tobacco research to measure tobacco use (Park and Kim, 2009), it can underestimate true smoking frequency due to socially desirable responding, causing a likelihood of underreporting smoking behaviour (Haley, Axelrad and Tilton, 1983). .

When analysing the data, some of the variables under study (e.g. subjective norms and parental influence – mother) were dropped out of the measurement model to achieve the required model fit. Hence, these variables were not measured. As such, more research is needed to further understand this research.

7.5 Areas for Future Research

According to water-pipe tobacco research, the chances of curbing this epidemic effectively are contingent upon continuous research. Further research is needed to shrink the gaps in knowledge. More studies into WTS behaviour are also needed to be able to design other ideas of effective interventions (Lopez *et al.*, 2017; Jawad *et al.*, 2018).

This study examined the '*openness to change-conservation'* dimension of personal values. Subsequently, the other dimensions of personal values can also be examined among water-pipe

smokers to see if these values guide their behaviour as well. Future studies can explore personal values in more depth, examining the relationship between all of Schwartz *et al.*'s (2012) refined theory basic values and WTS.

Future studies could empirically examine other factors that may influence the youths' and young adults' attitudes and intentions regarding WTS. For example, studies can consider the effect of existing regulations against WTS (e.g. warning labels) and their possible behavioural consequences. Other variables related to cultural elements can be taken into consideration, such as norms, customs, language, symbols, and other cultural values (e.g. Hofstede's cultural dimensions) that might influence individuals' attitudes towards WTS.

This study empirically examines the impact of socialisation agents (peers and family) on WTS. Other future studies can take into consideration other socialisation agents (external influences), such as the media. These studies can examine how such representations affect WTS initiation and general smoking behaviour.

Longitudinal studies may provide additional insights and examples of changes in actual WTS behaviour. Research can be carried out to examine the differences in WTS between different seasons and various occasions, such as the Holy month of Ramadan, Christmas, Easter and other holidays. By researching different time periods, insights can emerge that describe the popular smoking occasions and seasons and individuals' motivation to guide their intentions to quit into actual behaviour.

Future studies could conduct various comparative studies regarding various factors. Further research can explore differences between:

- ***Smoking status:***

  Differences in values and attitudes towards WTS between smokers, past smokers and non-smokers of water-pipes can add further knowledge to WTS literature.

- ***Methods of Smoking:***

  Other recent methods of smoking such as Electronic Nicotine Delivery Systems (ENDS) that include e-cigarettes, e-shisha (Stroup and Branstetter, 2019), and the culture of vaping may be

interesting to study in comparison to WTS. Research could investigate the differences in behaviour. Recently, Philip Morris International introduced the IQOS in the USA. Philip Morris International categorises the IQOS as a modified risk tobacco product, claiming that the product will have a reduced impact on health compared with cigarettes, as it does not actually burn tobacco (Max, Sung, Lightwood, Wang and Yao, 2018). As the IQOS grows in popularity and usage, it could soon be considered another WTS alternative.

- ***Various countries and geographic densities:***

  Additional research of this nature could be carried out in other countries. Future research could investigate the effect of possible regional differences that might be detected during the analyses. Moreover, comparative studies among different densities (urban, suburban and rural areas) within Egypt could create stimulating results. The differences in education and subcultures can affect WTS attitudes and behaviour, affecting WTS cessation programmes.

7.6 Concluding Comments

Despite the rather concerning figures and facts highlighting the prevalence of WTS in the EMR and around the world, the author of this thesis believes that there is still a way to curb this epidemic. With the help of the findings of this thesis, along with continuous research into the field of WTS, tobacco researchers and social marketers can implement various marketing tactics and programmes that will create the necessary awareness and behavioural responses towards WTS cessation. Findings of this thesis also point to the importance of focusing research efforts toward understanding behaviours that influence the society's youth and young adults, as they are the future and change agents of any nation.

The nature of WTS as a social activity is challenging for social marketers and public policy makers, as there are other forces influencing this behaviour regardless of the smoker's own personal attitudes and behaviour. However, social marketers can make use of these personal and interpersonal influences to encourage voluntary behavioural change. Although other regulatory procedures are essential to control WTS, such as effective legislation and policies, these procedures take time. However, as marketing efforts have effectively marketed various goods,

services, people and organisations around the world, these same tactics can help promote positive social behaviour and influence WTS cessation to Egyptian youth and young adults.

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Appendices

Appendix A: Population and Sample Validation

Table A- 1

Total Population	Total Egypt Population							
	90,086,267							
Total Governorate	Cairo				Alexandria			
	9,440,374				4,901,910			
Total Gender	Male		Female		Male		Female	
	4,770,458		4,669,916		2,493,620		2,408,290	

Age Group	Male		Female		Male		Female	
18-19	95,078	1.3%	88,118	1.2%	49,700	0.7%	45,443	0.6%
20-24	250,997	3.5%	235,294	3.3%	131,202	1.8%	121,342	1.7%
25-29	235,606	3.2%	222,342	3.1%	123,156	1.7%	114,662	1.6%
30-35	188,497	2.6%	179,729	2.5%	98,532	1.4%	92,687	1.3%

Age Group	Male		Female		Male		Female	
18-19	21	1.3%	20	1.2%	11	0.7%	10	0.6%
20-24	55	3.5%	52	3.3%	29	1.8%	27	1.7%
25-29	51	3.2%	50	3.1%	27	1.7%	26	1.6%
30-35	41	2.6%	40	2.5%	21	1.4%	21	1.3%

Quota Sample

Total Gender	Male	Female	Male	Female
	167	162	87	83
Total Governorate	Cairo		Alexandria	
	329		171	
Total Sample	Total Number of Samples			
	500			

Source: CAPMAS (2016)

Appendix B: Focus Group Questions

Key Area	Sample of Questions
Introduction	1. Do you engage in WTS only, or both cigarettes and WTS? Explain 2. What is your preferred tobacco smoking method? Why? 3. Describe your first-time experience with smoking tobacco? Explain 4. Are you aware of SMC regarding water-pipe tobacco smoking? Explain
Personal Values	1. When it comes to tobacco smoking, what are your views on it? Explain 2. Based on the following list of values, which values are important to you? Explain
Socialisation Agents Influence	1. Who influences your opinions the most family, friends, or other acquaintances? Why? 2. Do you smoke shisha alone or with people? With who? 3. Does your parent have a say in the activities you participate in or the products you purchase? Explain. 4. Do your friends smoke? Describe their usage rate. 5. Do any of your parent's smoke? Describe their usage rate. 6. What do your parents think of you smoking?
Fear of Negative Evaluation	1. When making a decision, do you put into regard your family and/or friends' opinion? Why? 2. How do you react if your friends disagree about a decision/ behaviour of yours? How about your family? Would you change your acts accordingly?
Attitude Toward WTS	1. How do you feel about smoking shisha? Explain
PBC	1. 1. Do you believe you can quit shisha smoking anytime you want? 2. How difficult do you think it would be to quit shisha smoking?
Subjective Norms	1. From your point of view, who do you think approves your shisha smoking habit? And who disapproves? Explain.
Gender	1. Do you think that a woman smoking is generally frowned upon in Egypt? 2. What about females smoking shisha? Explain
Religiosity	1. Would you consider yourself a religious person? 2. Do you think smoking is haram? Makruh? Explain. 3. Would the knowledge of it being haram/makruh stop you from engaging in WTS or encourage you to quit? Explain. 4. Would religious figures convince you to have intentions to stop WTS if they said it was haram/makruh? Explain.
Behavioural intention	1. When you go out in the weekend? What do you usually do? 2. Do you choose cafes/ restaurants depending on the availability of shishas? Why or why not? 3. Have you tried quitting shisha? What was the result? Explain 4. Do you intend to quit or minimize smoking shisha?

Appendix C: Focus Group Consent Form

Faculty of Business and Law
Informed Consent Form for research participants

Title of Study:	Understanding the factors that influence water pipe tobacco smoking among Eastern Mediterranean Youth
Person(s) conducting the research:	Professor Fraser McLeay Sahar R. Abugharara
Address of the researcher for correspondence:	18 Amir Farrahat St., Sporting, Alexandria, Egypt 1st Floor, Apt 105, Burj Al Esraa
Telephone:	(002) 01000201354
E-mail:	sahar.gharara@northumbria.ac.uk
Description of the broad nature of the research:	We are interested in understanding how your personal values, the social groups that surround you (such as friends and family) and your level of religiosity influence your attitude towards water-pipe tobacco smoking (WTS). Such research can help public policy makers and social marketers better understand individuals' behaviour associated with WTS and create programs for cessation. We also plan to publish one or more articles in academic journals about this research.
Description of the involvement expected of participants including the broad nature of questions to be answered or events to be observed or activities to be undertaken, and the expected time commitment:	You will take part in a focus group that consists of 8-10 individuals. The focus group will last between forty minutes and one hour. You will be asked a small number of questions by the researcher. If there are any questions which you would rather not answer then please tell the researcher that this is how you feel. You can then move straight on to the next question. If you do not understand a question then please ask the researcher to explain it in more detail. If at any point during the focus group you decide that you no longer want to take part, please tell the researcher. The focus group will then be stopped. You will be first asked general questions about your water-pipe smoking habits. There are also some questions about your own personal values that guide your decision making. We are also interested in your relationships with your peers and family and how these social groups surrounding you view WTS and your smoking behaviour.

Description of how the data you provide will be securely stored and/or destroyed upon completion of the project.	We would like to record this focus group if you are happy for this to be done. If you choose not to be recorded the interviewer will make detailed notes during the focus group. We will store recordings using a password to protect them so that only members of the research team can hear the recordings. Each recording will be transcribed and once a recording has been transcribed the recording will be deleted. In transcripts or notes from the focus groups we won't use your name or that of any other real person. Instead we will assign 'made up' names for everyone who takes part or whom you mention. We will also change details such as names of places or institutions so that it is not possible to determine who has been interviewed. We will store paper copies of the transcripts and notes securely and 'electronic' copies will be protected using a password so that only members of the research team can read them. After the academic journal papers which we write about this research have been accepted for publication we will shred the paper copies of transcripts and notes and delete the electronic copies. These copies will be stored for 5 years and then destroyed.

Information obtained in this study, including this consent form, will be kept strictly confidential (i.e. will not be passed to others) and anonymous (i.e. individuals and organisations will not be identified *unless this is expressly excluded in the details given above*).

Data obtained through this research may be reproduced and published in a variety of forms and for a variety of audiences related to the broad nature of the research detailed above. It will not be used for purposes other than those outlined above without your permission.

Participation is entirely voluntary and participants may withdraw at any time.

By signing this consent form, you are indicating that you fully understand the above information and agree to participate in this study on the basis of the above information.

Participant's signature: **Date:**

Researcher's signature: **Date:**

Please keep one copy of this form for your own records

Appendix D: Focus Group Figures

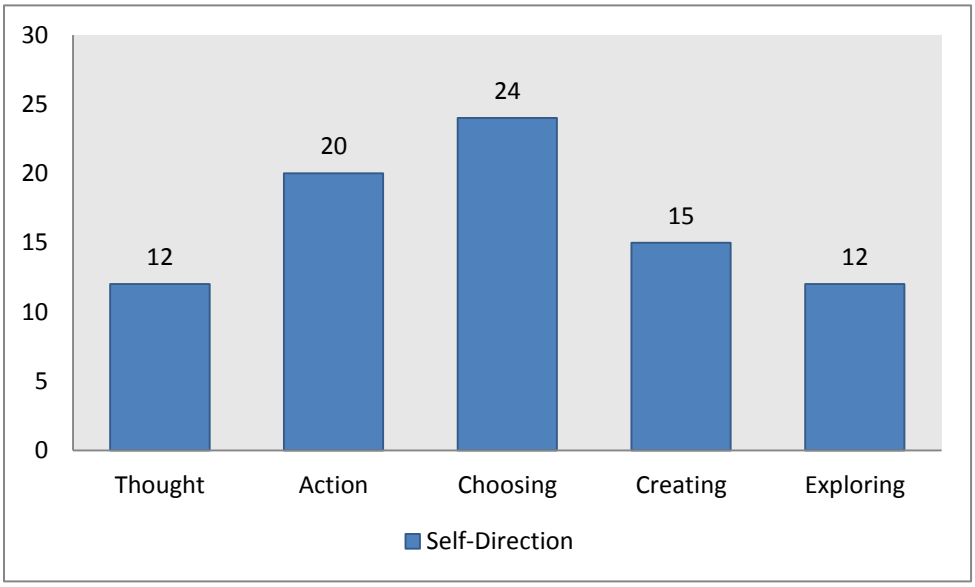

Figure A- 1: Codes of Self-Direction category

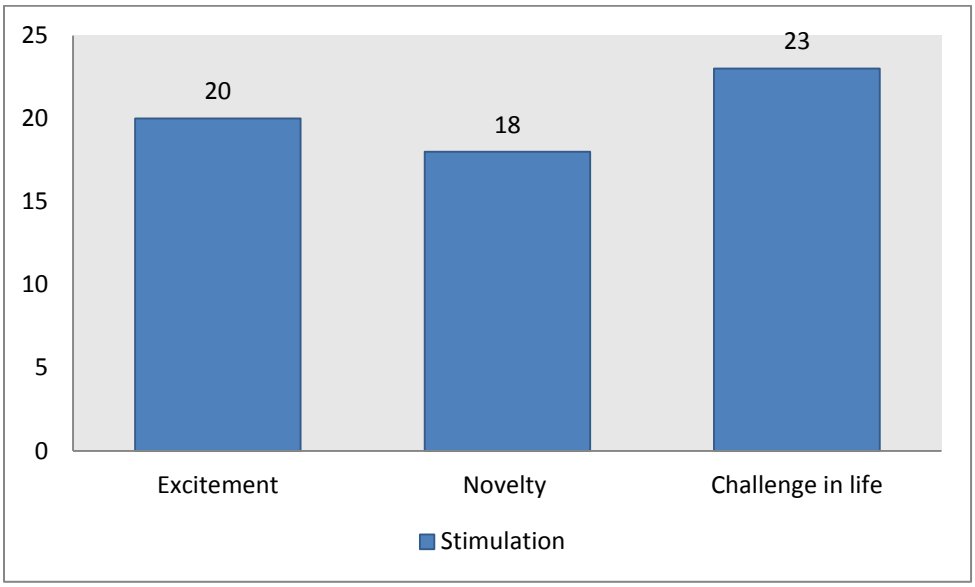

Figure A- 2: Codes of Stimulation category

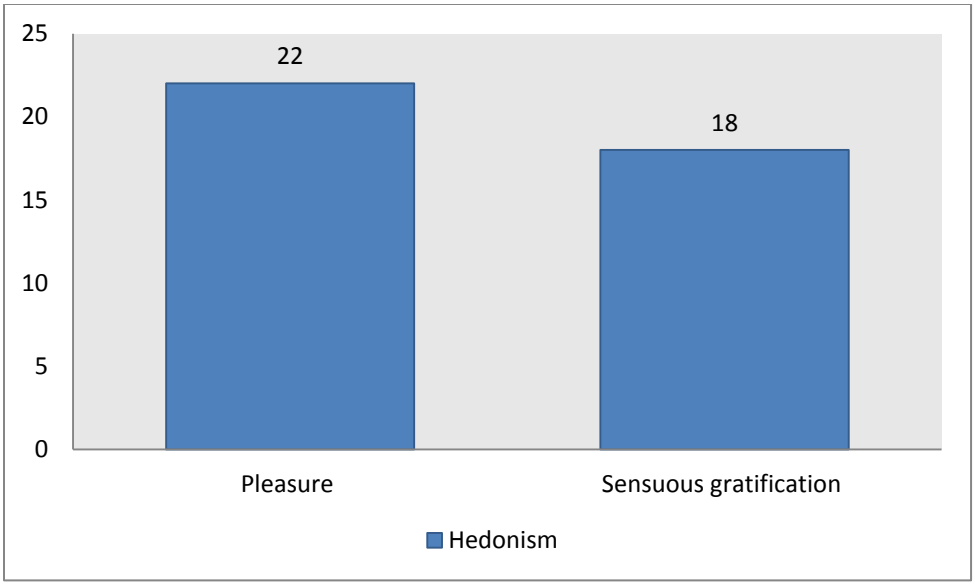

Figure A- 3: Codes of Hedonism category

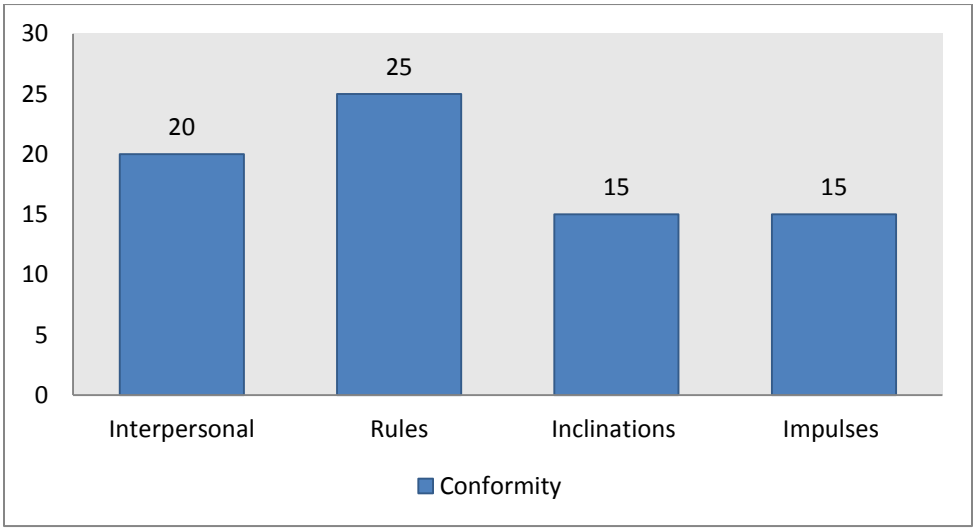

Figure A- 4: Codes of Conformity category

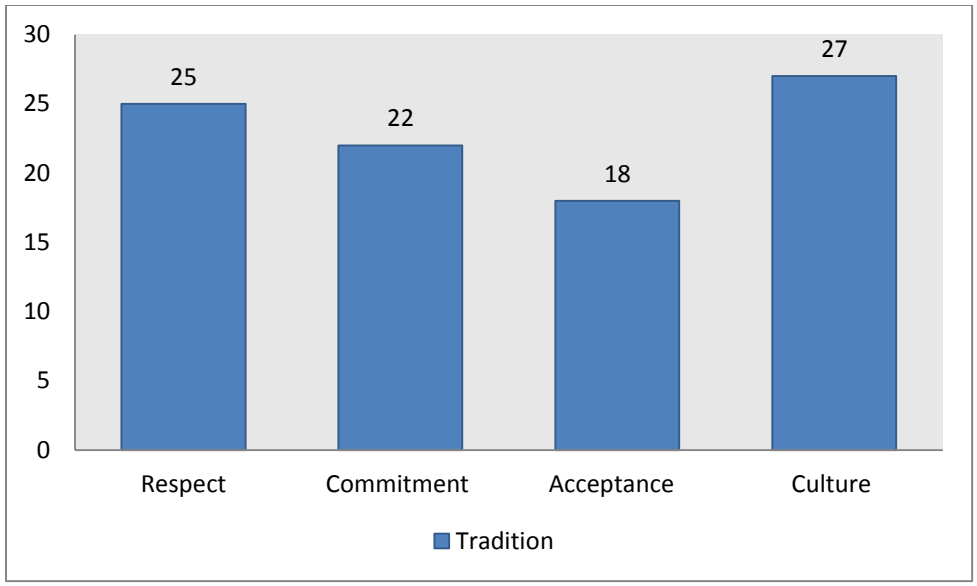

Figure A- 5: Codes of Tradition category

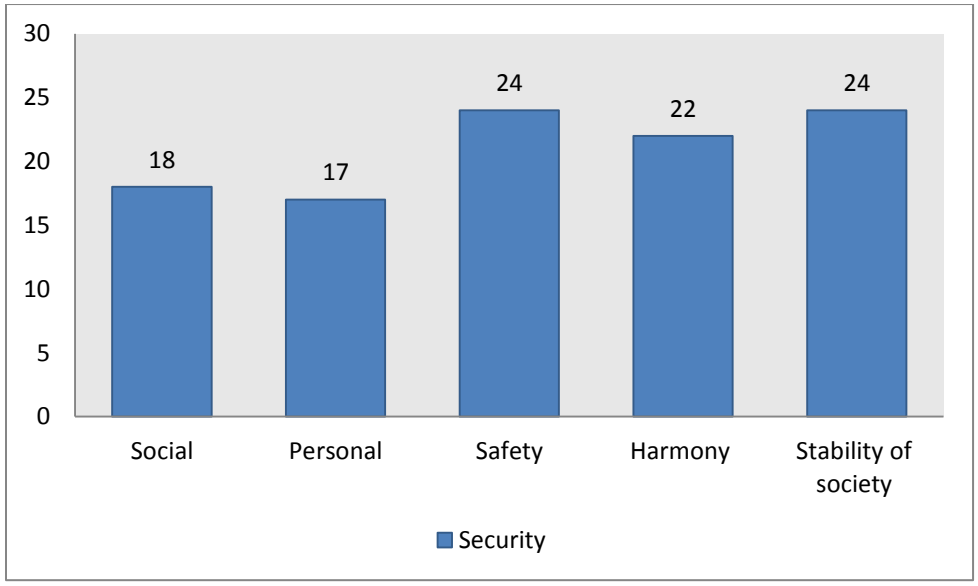

Figure A- 6: Codes of Security category

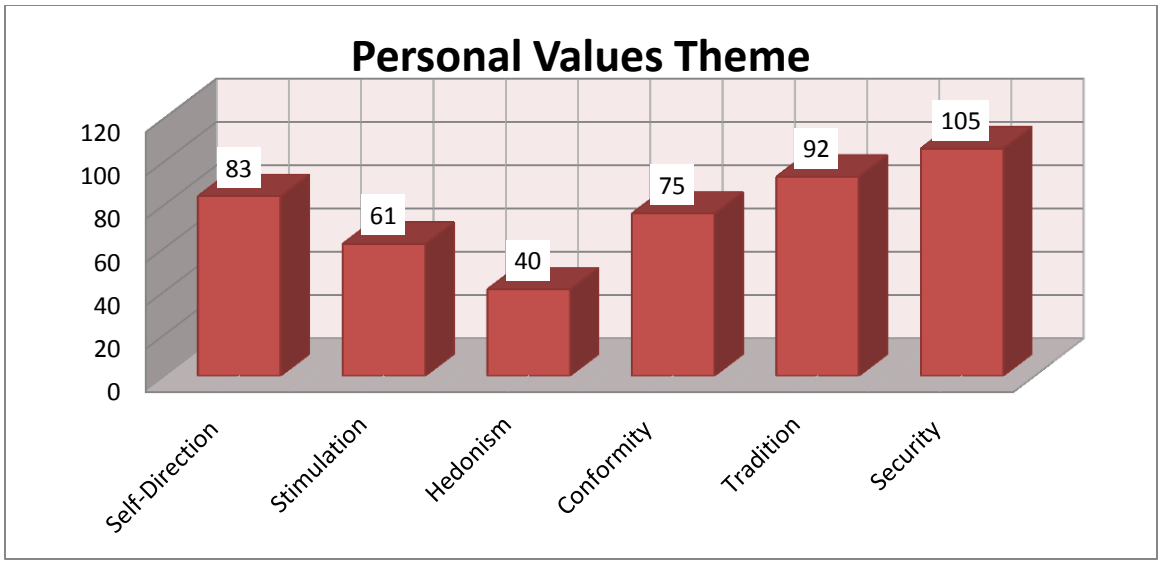

Figure A- 7: Personal Values Theme

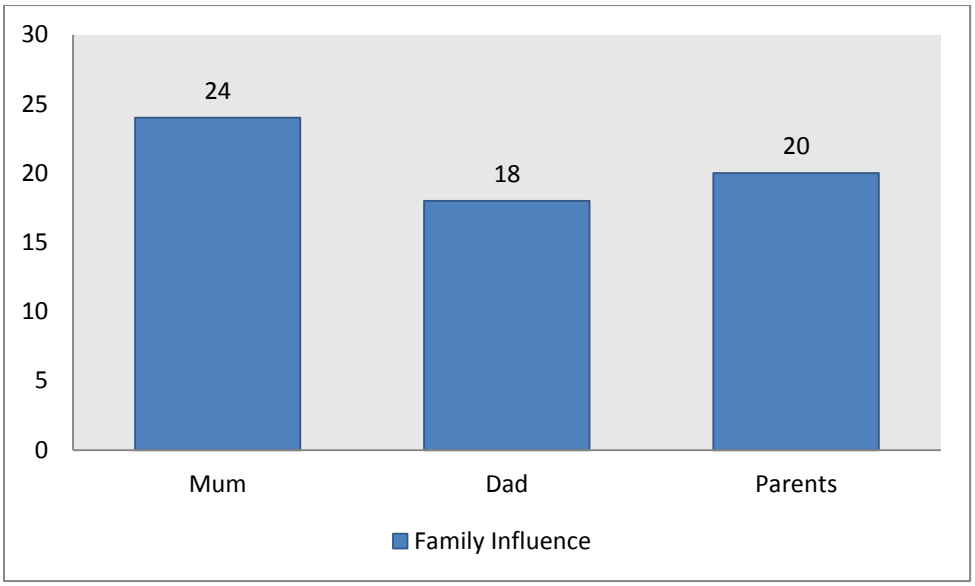

Figure A- 8: Codes of Family Influence category

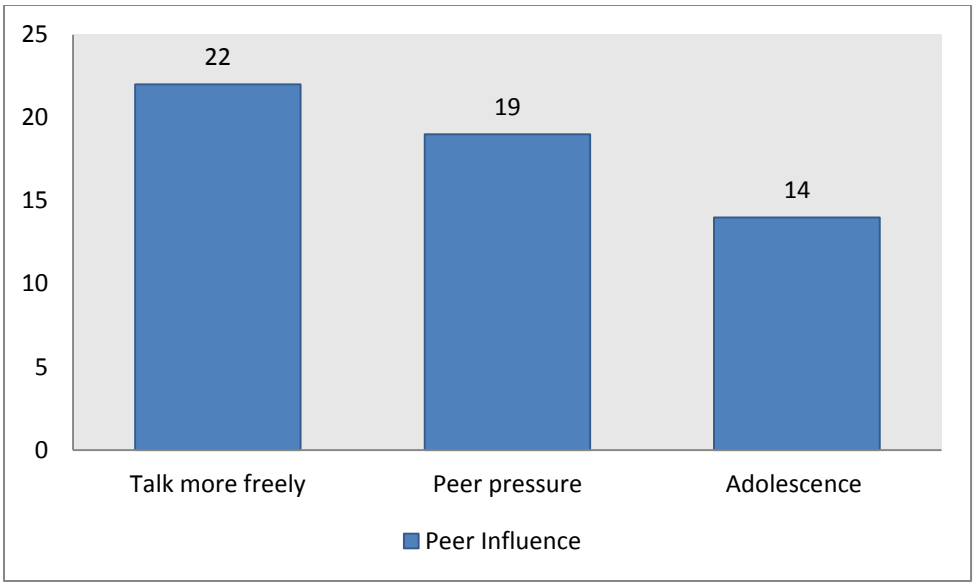

Figure A- 9: Codes of Peer Influence category

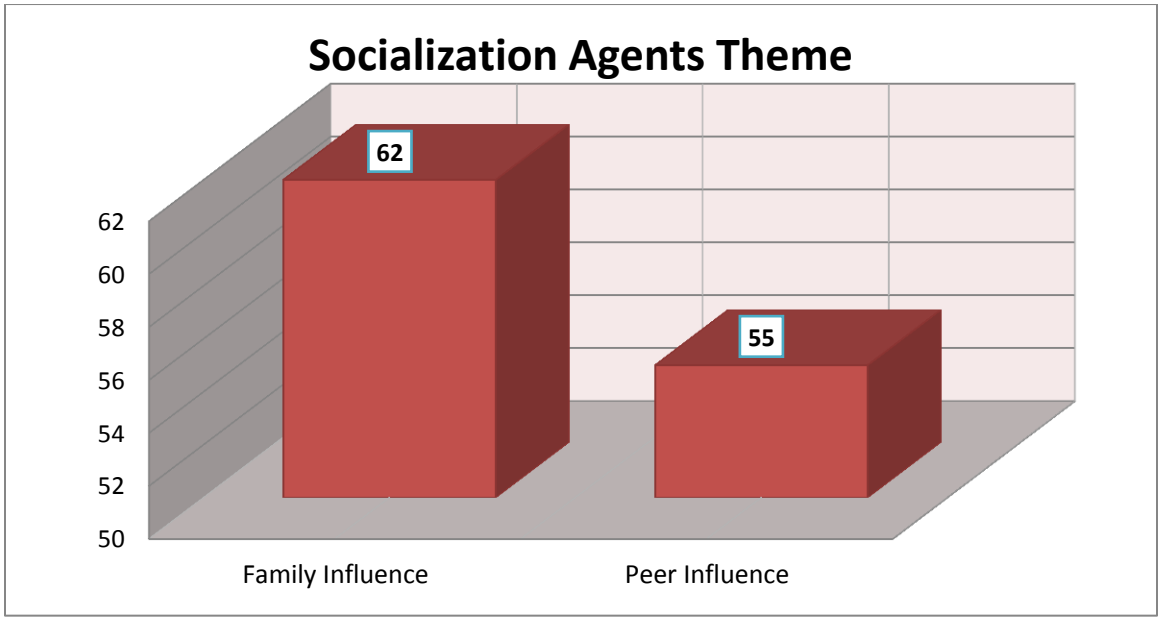

Figure A- 10: Socialization Agents Theme

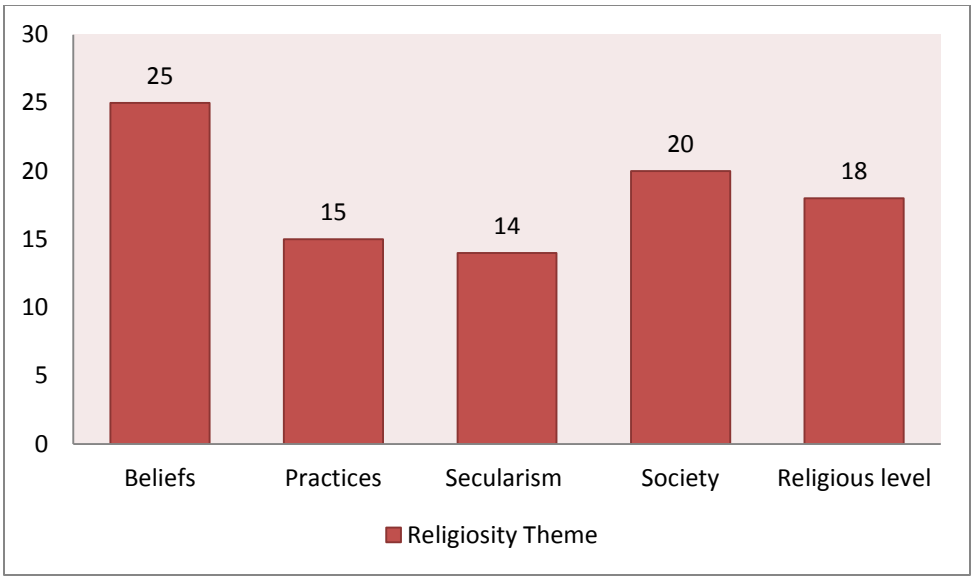

Figure A- 11: Religiosity Theme

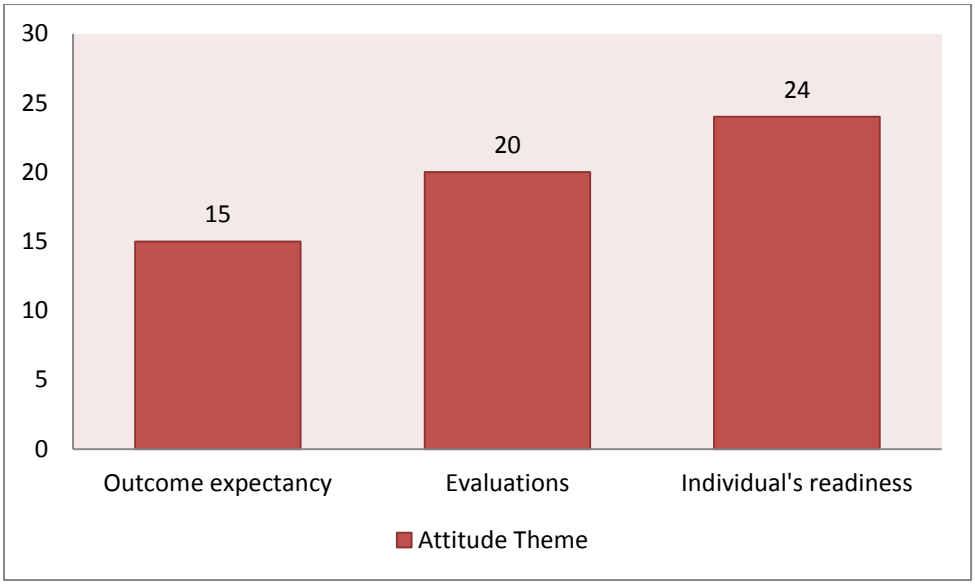

Figure A- 12: Attitude Theme

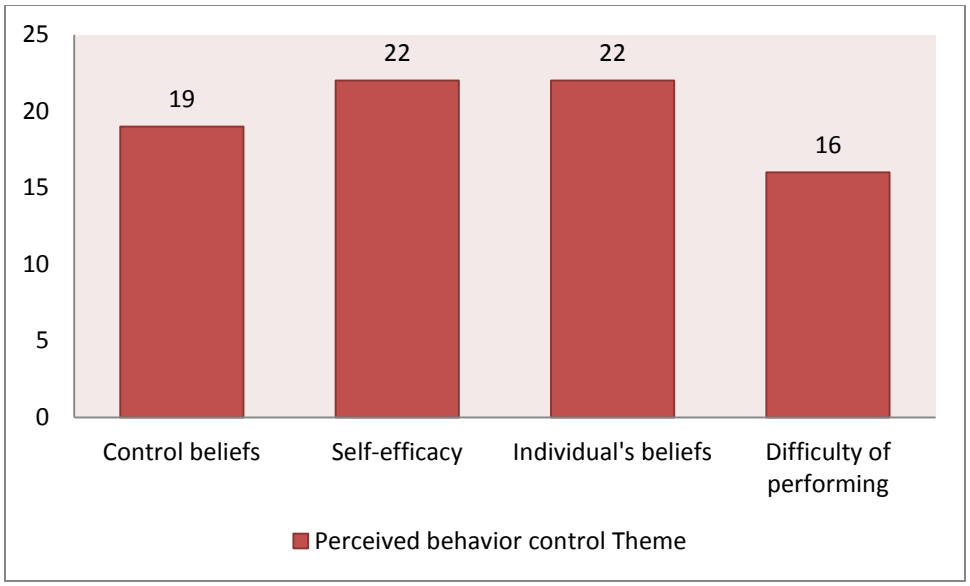

Figure A- 13: Perceived behaviour control Theme

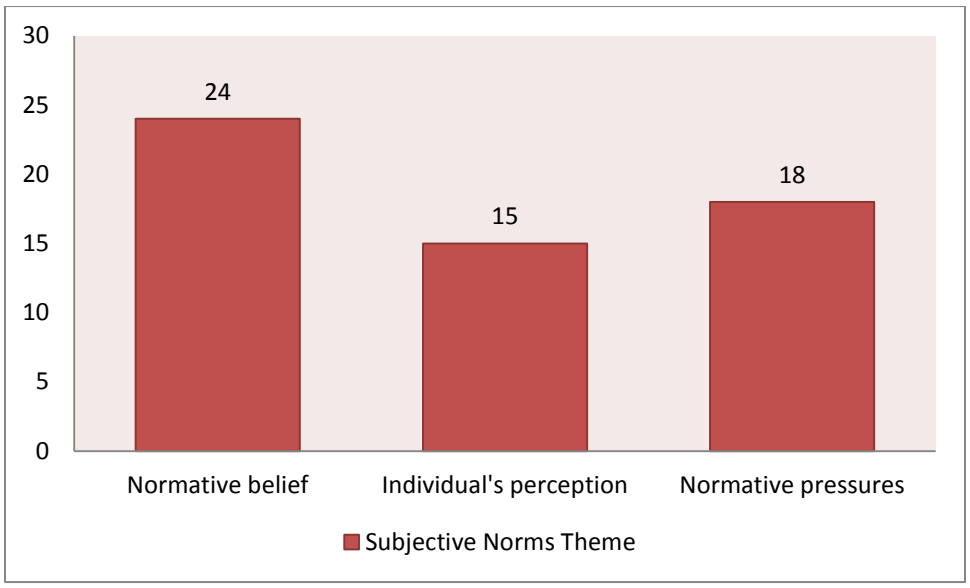

Figure A- 14: Subjective Norms Theme

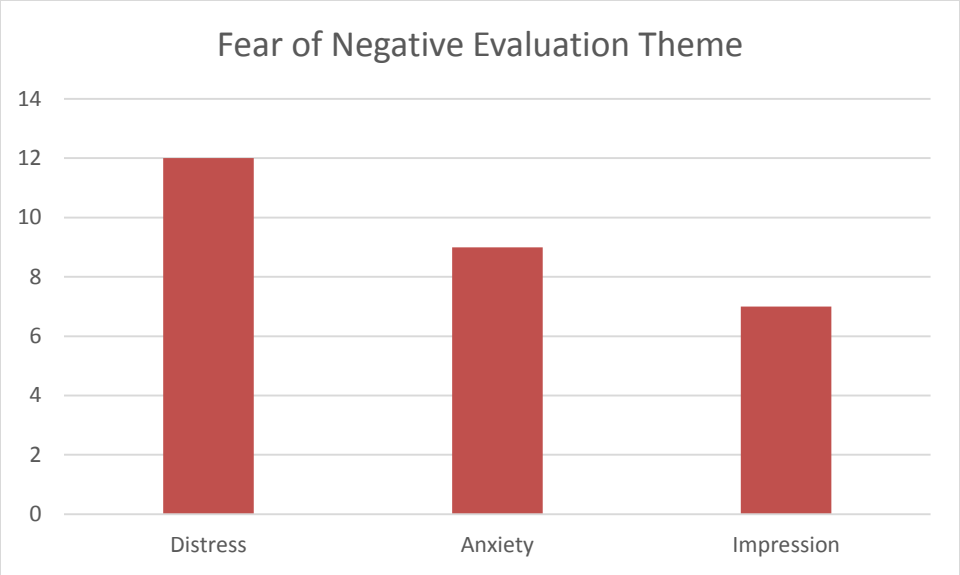

Figure A- 15: Fear of Negative Evaluation Theme

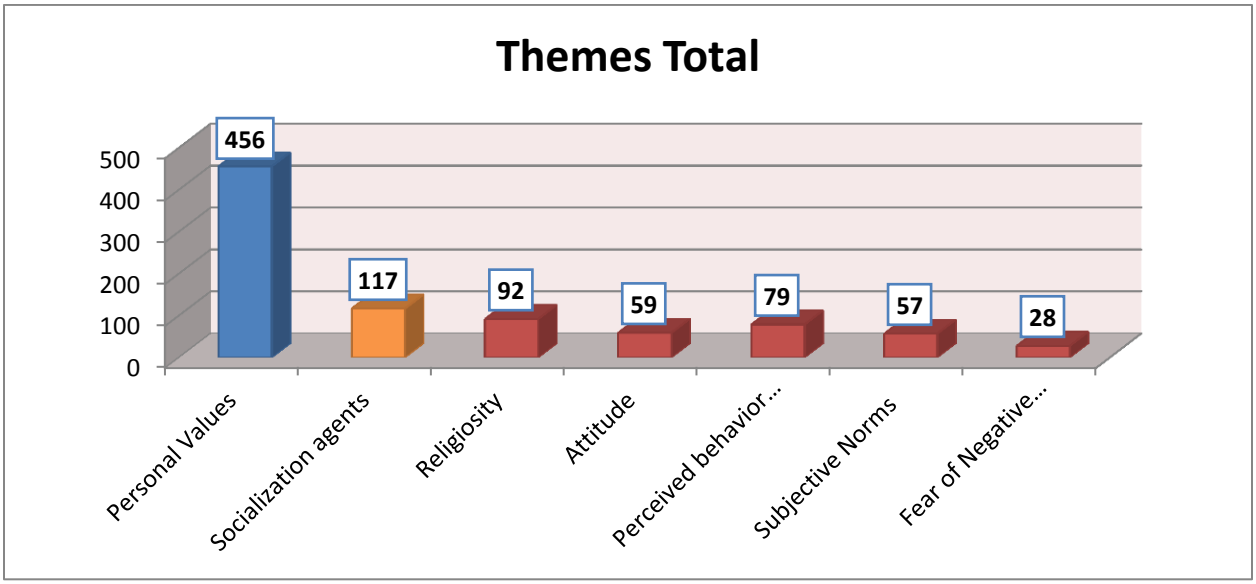

Figure A- 16: Research Themes

Appendix E: Organization Informed Consent Forms

Consent Form E-1: Badaweya Cafe

RESEARCH **ORGANISATION** INFORMED CONSENT FORM

Faculty of Business and Law

University of Northumbria

Completion of this form is required whenever research is being undertaken by Business and Law staff or students within any organisation. This applies to research that is carried out on the premises, or is about an organisation, or members of that organisation or its customers, as specifically targeted as subjects of research.

The researcher must supply an explanation to inform the organisation of the purpose of the study, who is carrying out the study, and who will eventually have access to the results. In particular issues of anonymity and avenues of dissemination and publications of the findings should be brought to the organisations' attention.

Researcher's Name: Sahar Mohamed Raafat Abu Gharara

Student ID No. (if applicable): W14030212

Researcher's Statement:

أنا مهتم بفهم كيف تؤثر القيم الشخصية للأفراد والمجموعات الاجتماعية التي تحيط بهم (مثل الأصدقاء والعائلة) على موقفهم من تدخين أو المعروف باسم تدخين الشيشة. يمكن أن يساعد هذا البحث صانعي السياسة العامة والمسوقين الاجتماعيين على فهم (WTS) التبغ بشكل أفضل وإنشاء برامج للتوقف. أخطط أيضًا لنشر مقال أو أكثر في المجلات الأكاديمية حول هذا البحث WTS سلوك الأفراد تجاه.

سيُطلب من المشاركين أولاً الموافقة قبل ملء الاستبيانات (التي سيتم ملؤها دون الكشف عن هويتك) ، وسيتم تقديم حوافز في شكل 50 جنيهًا للفاتورة.

سأقوم بتخزين الاستبيانات بشكل آمن ويمكن لأعضاء فريق البحث فقط الوصول إليها. بعد قبول أوراق المجلات الأكاديمية التي نكتبها حول هذا البحث للنشر ، سنقوم بتمزيق الاستبيانات. سيتم تخزين هذه النسخ لمدة 5 سنوات ثم يتم تدميرها.

Any organisation manager or representative who is empowered to give consent may do so here:

Name: Mohamed El Sawy

Position/Title: Manager

Organisation Name: Badaweya Café

Location: 30 Emad El Din Kamel St., Nasr city, Cairo

If the organisation is the Faculty of Business and Law please completed the following:

Start/End Date of Research / Consultancy project:	Start: End:
Programme Year Sample to be used: seminar group, entire year etc.	
Has Programme Director/Leader, Module Tutor being consulted, informed.	

Anonymity must be offered to the organisation if it does not wish to be identified in the research report. Confidentiality is more complex and cannot extend to the markers of student work or the reviewers of staff work, but can apply to the published outcomes. If confidentiality is required, what form applies?

[**X**] No confidentiality required

[ ] Masking of organisation name in research report

[ ] No publication of the research results without specific organisational consent

[ ] Other by agreement as specified by addendum

Signature: Mohamed El Sawy Date: 02/06/2017

This form can be signed via email if the accompanying email is attached with the signer's personal email address included. The form cannot be completed by phone, rather should be handled via post.

Consent Form E-2: Pottery Cafe

RESEARCH **ORGANISATION** INFORMED CONSENT FORM

Faculty of Business and Law

University of Northumbria

Completion of this form is required whenever research is being undertaken by Business and Law staff or students within any organisation. This applies to research that is carried out on the premises, or is about an organisation, or members of that organisation or its customers, as specifically targeted as subjects of research.

The researcher must supply an explanation to inform the organisation of the purpose of the study, who is carrying out the study, and who will eventually have access to the results. In particular issues of anonymity and avenues of dissemination and publications of the findings should be brought to the organisations' attention.

Researcher's Name: Sahar Mohamed Raafat Abu Gharara

Student ID No. (if applicable): W14030212

Researcher's Statement:

I am interested in understanding how individuals' personal values and the social groups that surround them (such as friends and family) influence their attitude towards water-pipe tobacco smoking (WTS) or commonly known as shisha smoking. This research can help public policy makers and social marketers better understand individuals' behaviour towards WTS and create programs for cessation. I also plan to publish one or more articles in academic journals about this research.

Participants will first be asked for consent before filling out the questionnaires (which will be filled out anonymously), and incentives in the form of 50 EGP will be given for their coffee on campus.

I will store the questionnaires securely and only members of the research team can have access to them. After the academic journal papers which we write about this research have been accepted for publication we will shred the questionnaires. These copies will be stored for 5 years and then destroyed.

Any organisation manager or representative who is empowered to give consent may do so here:

Name: Sherif Hassan

Position/Title: Manager

Organisation Name: Pottery Cafe

Location: 5 Abou El Feda Street,Om Kulthum Tower, Zamalek, Cairo.

If the organisation is the Faculty of Business and Law please completed the following:

Start/End Date of Research / Consultancy project:	Start: End:
Programme Year Sample to be used: seminar group, entire year etc.	
Has Programme Director/Leader, Module Tutor being consulted, informed.	

Anonymity must be offered to the organisation if it does not wish to be identified in the research report. Confidentiality is more complex and cannot extend to the markers of student work or the reviewers of staff work, but can apply to the published outcomes. If confidentiality is required, what form applies?

[X] No confidentiality required

[ ] Masking of organisation name in research report

[ ] No publication of the research results without specific organisational consent

[ ] Other by agreement as specified by addendum

Signature: Sherif Hassan Date: 02/06/2017

This form can be signed via email if the accompanying email is attached with the signer's personal email address included. The form cannot be completed by phone, rather should be handled via post.

Consent Form E-3: Sheesh Beesh Cafe

RESEARCH **ORGANISATION** INFORMED CONSENT FORM

Faculty of Business and Law

University of Northumbria

Completion of this form is required whenever research is being undertaken by Business and Law staff or students within any organisation. This applies to research that is carried out on the premises, or is about an organisation, or members of that organisation or its customers, as specifically targeted as subjects of research.

The researcher must supply an explanation to inform the organisation of the purpose of the study, who is carrying out the study, and who will eventually have access to the results. In particular issues of anonymity and avenues of dissemination and publications of the findings should be brought to the organisations' attention.

Researcher's Name: Sahar Mohamed Raafat Abu Gharara

Student ID No. (if applicable): W14030212

Researcher's Statement:

I am interested in understanding how individuals' personal values and the social groups that surround them (such as friends and family) influence their attitude towards water-pipe tobacco smoking (WTS) or commonly known as shisha smoking. This research can help public policy makers and social marketers better understand individuals' behaviour towards WTS and create programs for cessation. I also plan to publish one or more articles in academic journals about this research.

Participants will first be asked for consent before filling out the questionnaires (which will be filled out anonymously), and incentives in the form of 50 EGP will be given for their bill.

I will store the questionnaires securely and only members of the research team can have access to them. After the academic journal papers which we write about this research have been accepted for publication we will shred the questionnaires. These copies will be stored for 5 years and then destroyed.

Any organisation manager or representative who is empowered to give consent may do so here:

Name: Ahmed Hafez

Position/Title: Co-Owner of Sheesh Beesh

Organisation Name: Sheesh Beesh

Location: 52 Fouad Street, Al Attarin Sharq, Al Attarin, Alexandria Governorate 21529

If the organisation is the Faculty of Business and Law please completed the following:

Start/End Date of Research / Consultancy project:	Start: End:
Programme Year Sample to be used: seminar group, entire year etc.	
Has Programme Director/Leader, Module Tutor being consulted, informed.	

Anonymity must be offered to the organisation if it does not wish to be identified in the research report. Confidentiality is more complex and cannot extend to the markers of student work or the reviewers of staff work, but can apply to the published outcomes. If confidentiality is required, what form applies?

[X] No confidentiality required

[ ] Masking of organisation name in research report

[ ] No publication of the research results without specific organisational consent

[ ] Other by agreement as specified by addendum

Signature: Ahmed Hafez Date: 01/06/2017

This form can be signed via email if the accompanying email is attached with the signer's personal email address included. The form cannot be completed by phone, rather should be handled via post.

Appendix F: Questionnaire Arabic

أعزائي المشاركين

أنتم مدعون للمشاركة في هذه الدراسة لفهم أفضل لموقفك تجاه تدخين الشيشة. حيث أن تدخين الشيشة أصبح جزء من أسلوب حياتنا وثقافتنا المصرية. ونحن نحاول الحصول علي معرفة وعلم اكثر لأسباب تدخين الناس الشيشة. والغرض من هذه الدراسة أكاديمي بحت و المعلومات التي ستقدمها ستساعد الباحثة في بحثها للحصول علي رسالة الدكتوراه. لن يتم عرض إجاباتك على أي شخص، وسوف تبقى مجهولة. وستظل جميع الردود التي ستقدمها لهذه الدراسة سرية. فقط الباحثون المشاركون في هذه الدراسة سيتمكنون من الوصول إلى البيانات يجب أن تكون فوق سن **18 سنة** للاشتراك في هذه الدراسة. هذا الاستبيان سيستغرق منك من 8–6 دقائق لتنتهي منه.

نشكرك على وقتك ومشاركتك في هذا البحث.

طالب دكتوراه

- هل قمت بتجربة تدخين الشيشة من قبل, علي الأقل مرة واحدة؟

☐ نعم استمرار المقابلة ☐ لا انهاء المقابلة

القسم الأول: يرجى وضع إشارة عند الإجابة المناسبة أدناه.

1. كم عدد المرات التي دخنت بها الشيشة في حياتك كلها؟

☐ نفس واحد أو أكثر، ولكن ليس حجر كامل أو قعدة شيشة
☐ 1 مرة
☐ 2–5 مرات
☐ 6–15 مرات
☐ 16 مرة أو أكثر

2. كم مرة تدخن الشيشة حاليا؟

☐ مرة واحدة على الأقل كل عام، ولكن ليس شهريا
☐ مرة واحدة على الأقل كل شهر، ولكن ليس أسبوعيا
☐ مرة واحدة على الأقل كل أسبوع، ولكن ليس يوميا
☐ مرة واحدة على الأقل كل يوم، أو معظم الأيام كل شهر
☐ توقفت عن التدخين الشيشة (اذهب إلى 5)

3. كم من الوقت كنت تدخن الشيشة بهذا المعدل؟

☐ أقل من 6 أشهر
☐ 6 أشهر – 1 سنة
☐ 1 سنة – 2 سنوات
☐ 2 سنوات – 3 سنوات
☐ 3 سنوات – 4 سنوات
☐ 4 سنوات أو أكثر

4. كم عمرك عندما كنت تدخن الشيشة لأول مرة، أو حتى حاولت تأخذ نفس؟

☐ 14 سنة أو أقل
☐ 15–16 سنة
☐ 17–18 سنة
☐ 19–20 سنة
☐ 21–22 سنة
☐ 23 سنة أو أكثر

5. هل يدخن والديك الشيشة؟

☐ لا يدخن والدي أبدا
☐ أحد الوالدين هو مدخن سابق والآخر لم يدخن أبدا
☐ كلا الوالدين مدخنين سابقين
☐ أحد الوالدين هو المدخن الحالي والآخر لم يدخن أبدا
☐ أحد الوالدين هو المدخن الحالي والآخر هو المدخن السابق
☐ كلا الوالدين مدخنين حاليين

6. هل يعرف والديك أنك تدخن الشيشة؟

☐ أمي تعرف
☐ أبي يعرف
☐ كل من والدي يعرفان
☐ لا أحد من والدي يعرف

7. هل تدخن حاليا السجائر؟

☐ نعم
☐ لا

8. هل تعتبر نفسك "مدمن " على تدخين الشيشة؟

☐ نعم
☐ لا

القسم الثاني: أسئلة تتعلق بتجربة تدخين الشيشة

11. هنا نصف بإيجاز بعض الأشخاص. يرجى قراءة كل وصف والتفكير إلى أي مدى أنت مثل هؤلاء الأشخاص وفقا للمقياس التالي: (1) "ليس مثلي على الإطلاق" إلى (5) "مثلي جدا". ضع إشارة لردك المناسب.

إلى أي مدى أنت هذا الشخص؟					
	ليس مثلي على الإطلاق (1)	ليس مثلي (2)	قليلا مثلي (3)	مثلي (4)	مثلي جدا (5)
• كونهم مبدعين مهم بالنسبة لهم.	☐	☐	☐	☐	☐
• من المهم لهم أن يشكل آراءهم الخاصة وأن يكون لديهم أفكار أصلية.	☐	☐	☐	☐	☐
• تعلم الأشياء لنفسهم وتحسين قدراتهم مهم بالنسبة لهم.	☐	☐	☐	☐	☐
• من المهم لهم أن يتخذ قراراتهم بشأن حياتهم.	☐	☐	☐	☐	☐
• القيام بكل شيء مستقل له أهمية بالنسبة لهم.	☐	☐	☐	☐	☐
• حرية اختيار ما يقومون به مهمة بالنسبة لهم.	☐	☐	☐	☐	☐
• هم دائما يبحثون عن أنواع مختلفة من الأشياء للقيام بها.	☐	☐	☐	☐	☐
• الإثارة في الحياة مهمة بالنسبة لهم.	☐	☐	☐	☐	☐
• يعتقدون أنه من المهم أن نختبر كل أنواع التجارب الجديدة.	☐	☐	☐	☐	☐
• قضائهم وقت جيد هو المهم بالنسبة لهم.	☐	☐	☐	☐	☐
• التمتع بملذات الحياة هو المهم بالنسبة لهم.	☐	☐	☐	☐	☐
• انهم يستفيدون من كل فرصة للحصول على المتعة.	☐	☐	☐	☐	☐
• يتجنبون أي شيء قد يعرض سلامتهم للخطر.	☐	☐	☐	☐	☐
• أمنهم الشخصي مهم للغاية بالنسبة لهم.	☐	☐	☐	☐	☐
• من المهم لهم أن يعيشوا في محيط آمن.	☐	☐	☐	☐	☐
• من المهم لهم أن تحمي بلدهم نفسها من جميع التهديدات.	☐	☐	☐	☐	☐
• يريد ون أن تكون الدولة قوية حتى تتمكن من الدفاع عن مواطنيها.	☐	☐	☐	☐	☐
• وجود النظام والاستقرار في المجتمع هو المهم بالنسبة لهم.	☐	☐	☐	☐	☐
• من المهم لهم الحفاظ على القيم التقليدية أو المعتقدات.	☐	☐	☐	☐	☐
• اتباع عادات أسرهم أو عادات الدين مهم بالنسبة لهم.	☐	☐	☐	☐	☐
• يقدرون بقوة الممارسات التقليدية لثقافتهم.	☐	☐	☐	☐	☐
• يعتقدون أنه ينبغي لهم دائما أن يفعلوا ما يقوله الناس في السلطة.	☐	☐	☐	☐	☐
• من المهم لهم أن يتبعوا القواعد حتى عندما لا يوجدون أحد يراقب.	☐	☐	☐	☐	☐
• التمسك بجميع القوانين أمر مهم بالنسبة لهم.	☐	☐	☐	☐	☐

• من المهم أن يتجنبوا إزعاج الآخرين.	☐	☐	☐	☐	☐
• يعتقدون أنه من المهم ألا يضايقوا أي شخص.	☐	☐	☐	☐	☐
• هم يحاولون دائما أن يراعوا الناس ويتجنبوا استفزازهم.	☐	☐	☐	☐	☐

12. اقرأ كل من العبارات التالية بعناية وبيان ما إذا كنت توافق أو لا توافق على العبارات وفقا للمقياس التالي: (1) "غير صحيح تماما" إلى (5) "صحيح تماما". ضع إشارة لردك المناسب.

	غير صحيح على الإطلاق (1)	غير صحيح إلي حد ما (2)	محايد (3)	صحيح إلي حد ما (4)	صحيح تماما (5)
• أنا وأمي مهتمان برأي بعضنا البعض حول تدخين الشيشة.	☐	☐	☐	☐	☐
• أنا وأمي يمكننا أن نتواصل بسهولة حول وجهة نظري في تدخين الشيشة.	☐	☐	☐	☐	☐
• كلما ناقشت أنا وأمي مسألة تدخين الشيشة نشعر بالراحة على حد سواء.	☐	☐	☐	☐	☐
• كلما ناقشت أنا وأمي مسألة تدخين الشيشة أشعر بأنها غير صادقة/غير عقلانية.	☐	☐	☐	☐	☐
• كلما ناقشت أنا وأمي مسألة تدخين الشيشة أشعر أنها تفهمني.	☐	☐	☐	☐	☐
• كلما ناقشت أنا وأمي مسألة تدخين الشيشة تأخذني علي محمل الجد.	☐	☐	☐	☐	☐
• أنا وأبي مهتمان برأي بعضنا البعض حول تدخين الشيشة.	☐	☐	☐	☐	☐
• أنا وأبي يمكننا أن نتواصل بسهولة عن وجهة نظري حول تدخين الشيشة.	☐	☐	☐	☐	☐
• كلما ناقشت أنا وأبي مسألة تدخين الشيشة نشعر بالراحة على حد سواء.	☐	☐	☐	☐	☐
• كلما ناقشت أنا وأبي مسألة تدخين الشيشة أشعر بأنه غير صادق/غير عقلاني.	☐	☐	☐	☐	☐
• كلما ناقشت أنا وأبي مسألة تدخين الشيشة أشعر أنه يفهمني.	☐	☐	☐	☐	☐
• كلما ناقشت أنا وأبي مسألة تدخين الشيشة يأخذني علي محمل الجد.	☐	☐	☐	☐	☐

13. تقيس العبارات التالية علاقتك مع أصدقائك. ضع إشارة للاستجابة المناسبة.

كم من أصدقائك يدخن الشيشة؟					
	لا أحد أو تقريبا لا أحد (1)	أقل من النصف (2)	النصف (3)	أكثر من النصف (4)	كلهم أو بالكاد كلهم (5)
• أصدقاء عرفتهم لمدة طويلة	☐	☐	☐	☐	☐
• أصدقاء تختلط بهم كثيرا	☐	☐	☐	☐	☐
• أعز الأصدقاء	☐	☐	☐	☐	☐

14. إلى أي درجة سيوافق أو يرفض الآخرون تدخينك الشيشة ؟ يرجى وضع إشارة للاستجابة المناسبة.

	رفض بشدة (1)	رفض (2)	الرفض أحيانا (3)	الموافقة أحيانا (4)	الموافقة بشدة (5)
• الأب	☐	☐	☐	☐	☐
• الأم	☐	☐	☐	☐	☐

• الأصدقاء	☐	☐	☐	☐	☐
• أعز الأصدقاء	☐	☐	☐	☐	☐

15. اقرأ كل من العبارات التالية بعناية وبيان ما إذا كنت موافق أو لا توافق على هذه العبارات وفقا للمقياس التالي: (1) هو "ليس على الإطلاق مثلي" إلى (5) "مثلي تماما". ضع إشارة لردك المناسب.

	ليس مثلي علي الإطلاق (1)	يشبهني قليلا (2)	مثلي باعتدال (3)	مثلي (4)	مثلي تماما (5)
• أنا قلق حول ما سوف يفكر الآخرين في حتى عندما أعرف أن تفكيرهم لا يحدث أي فرق.	☐	☐	☐	☐	☐
• أنا غير مهتم حتى لو كنت أعرف أن الناس يشكلون انطباعا غير محبذ عني.	☐	☐	☐	☐	☐
• أنا كثيرا ما أخشى من أن الأشخاص الآخرين سيلاحظون أوجه القصور لدي.	☐	☐	☐	☐	☐
• أنا نادرا ما أقلق بشأن أي انطباع أتركه على شخص ما.	☐	☐	☐	☐	☐
• أخشى أن الآخرين لن يوافقوا علي.	☐	☐	☐	☐	☐
• أخشى أن يجد الناس خطأ بي.	☐	☐	☐	☐	☐
• آراء الآخرين عني لا تهمني.	☐	☐	☐	☐	☐
• عندما أتحدث إلى شخص ما، أشعر بالقلق إزاء ما قد يفكر به.	☐	☐	☐	☐	☐
• أنا عادة قلق حول أي نوع من الانطباع الذي أتركه.	☐	☐	☐	☐	☐
• إذا كنت أعرف شخص يحكم علي، فإنه ليس له تأثير يذكر على.	☐	☐	☐	☐	☐
• في بعض الأحيان أعتقد أنني قلق جدا حول ما يعتقده الناس عني.	☐	☐	☐	☐	☐
• أنا غالبا ما أقلق أنني سوف أقول أو أفعل أشياء خطأ.	☐	☐	☐	☐	☐

16. اقرأ كل من العبارات التالية بعناية وبيان ما إذا كنت تعتقد أن هذه التصريحات صحيحة أم لا وفقا للمقياس التالي: (1) "غير صحيح على الإطلاق" إلى (5) "صحيح تماما". ضع إشارة لردك المناسب.

	ليس صحيح علي الإطلاق (1)	صحيح قليلا (2)	محايد (3)	صحيح باعتدال (4)	صحيح تماما (5)
• إيماني ينطوي على كل حياتي	☐	☐	☐	☐	☐
• لا يهم كثيرا ما أعتقد طالما أعيش حياة أخلاقية	☐	☐	☐	☐	☐
• ينبغي للمرء أن يلتمس توجيه الله عند اتخاذ القرارات الهامة	☐	☐	☐	☐	☐
• في حياتي، أشعر بوجود الله	☐	☐	☐	☐	☐
• أرفض السماح للدين بالتأثير على الشؤون اليومية	☐	☐	☐	☐	☐
• إيماني يقيد أحيانا أفعالي	☐	☐	☐	☐	☐
• لا شيء اهم من أن أفعل أشياء في سبيل الله	☐	☐	☐	☐	☐
• هناك أشياء كثيرة أكثر أهمية في الحياة من الدين	☐	☐	☐	☐	☐
• إن معتقداتي الدينية تكمن وراء نهجي الكامل في الحياة	☐	☐	☐	☐	☐
• أحاول بجد حمل الدين في التعامل مع الحياة	☐	☐	☐	☐	☐

17. التالي يقيس موقفك تجاه تدخين الشيشة. باستخدام مقياس أدناه من 1 (سلبية) إلى 7 (إيجابية)، يرجى وضع دائرة حول الأجابة المناسبة.

أعتقد أن التدخين اليومي للشيشة هو:						
غير سار	1	2	3	4	5	سار
مضر	1	2	3	4	5	بريء
بدون فائدة	1	2	3	4	5	مفيد
ملل	1	2	3	4	5	مثير
خطير	1	2	3	4	5	غير ضار
غير صحي	1	2	3	4	5	صحي
سيء	1	2	3	4	5	جيد

18. تقيس العبارات التالية نيتكم المستقبلية لتدخين الشيشة. استخدام المقياس التالي: (1) هو "من المحتمل جدا" إلى (5) "غير المحتمل للغاية". ضع إشارة لردك المناسب.

	من المرجح للغاية (1)	من المحتمل (2)	محايد (3)	غير محتمل (4)	غير محتمل للغاية (5)
• أتوقع أن يكون لدي ما يكفي من العزم في المستقبل على الإقلاع عن التدخين	☐	☐	☐	☐	☐
• وجود تصميم قوي سوف يمكنني من الإقلاع عن تدخين الشيشة	☐	☐	☐	☐	☐

19. تقيس العبارات التالية نيتكم المستقبلية لتدخين الشيشة. استخدام المقياس التالي: (1) هو "بالتأكيد لا" إلى (5) "بالتأكيد نعم". ضع إشارة لردك المناسب.

	بالتأكيد لأ (1)	علي الأغلب لا (2)	محايد (3)	ربما نعم (4)	بالتأكيد نعم (5)
• أعتزم تدخين الشيشة (أو الاستمرار في التدخين)	☐	☐	☐	☐	☐
• أعتزم تدخين الشيشة مع أصدقائي	☐	☐	☐	☐	☐
• أعتزم تدخين الشيشة مع والدي	☐	☐	☐	☐	☐
• أعتزم تدخين الشيشة في غضون 6 أشهر	☐	☐	☐	☐	☐
• أعتزم تدخين الشيشة في غضون 2 سنوات	☐	☐	☐	☐	☐

القسم الثالث: التفاصيل الشخصية

20. عمر:

- ☐ 18–21
- ☐ 22–25
- ☐ 26–29
- ☐ 30 – 33
- ☐ 34 أو أعلى

21. أعلى مستوى تعليم مكتمل

- ☐ أمي
- ☐ المدرسة الابتدائية
- ☐ مدرسة ثانوية
- ☐ كلية
- ☐ درجة الدراسات العليا
- ☐ أخرى:

22. جنس:

- ☐ أنثى

23. مدينة الإقامة:

- ☐ القاهرة

☐ ذكر

☐ الإسكندرية

☐ أخرى

24. الحالة الاجتماعية:

☐ أعزب

☐ متزوج

☐ مطلق أو منفصل

☐ أرمل

25. عدد الاطفال:

☐ لا يوجد

☐ واحد

☐ اثنين

☐ أكثر من طفلين

26. الديانة:

☐ مسلم

☐ المسيحية

☐ يفضل عدم القول

☐ أخرى:

27. الوضع الوظيفي الحالي:

☐ عاطل عن العمل

☐ مدير / المدراء التنفيذيين.

☐ الإدارية

☐ المهنيين

☐ الأكاديميين

☐ العاملين لحسابهم الخاص

☐ العمال

☐ طالب

☐ ربة منزل

☐ أخرى:

28. متوسط دخل الأسرة الشهري بالجنيه المصري:

☐ أقل من 2000

☐ 2000 – أقل من 5000

☐ 5000 – أقل من 10000

☐ أكثر من 10000

شكراً على حسن تعاونكم

Appendix G: Questionnaire English

Dear Participants,

You are invited to participate in a study that is being conducted to better understand attitudes and behaviour towards water-pipe tobacco smoking *(Shisha). Since smoking shisha has become a part of our Egyptian culture and lifestyle, we are trying to gain more insight and knowledge about the reasons why people smoke shisha. This questionnaire is a part of a PhD study and by participating you will be helping out the researcher in her PhD. Your answers will not be released to anyone and will remain anonymous and confidential. Only the researchers involved in this study will have access to the data.* You have to be above **18 years old** to participate in this study.

This questionnaire should take you are 6-8 minutes to complete.

Thank you for your time and willingness to participate in this research.

Doctoral Student

❖ Have you ever tried smoking shisha before, at least once?

Yes ☐ continue the interview No ☐ end the interview

SECTION ONE: Please tick (✓) the appropriate response below.

1. How many times have you smoked shisha in your entire life?

- ☐ 1 or more puffs, but never a full bowl or session
- ☐ 1 time
- ☐ 2–5 times
- ☐ 6–15 times
- ☐ 16 or more times

2. How frequently do you currently smoke shisha?

- ☐ At least once each year, but not monthly
- ☐ At least once each month, but not weekly
- ☐ At least once each week, but not daily
- ☐ At least once each day, or most days each month

3. How long have you smoked shisha at this frequency?

- ☐ Less than 6 months
- ☐ 6 months to less than 1 year
- ☐ 1 to less than 2 years
- ☐ 2 years to less than 3 years
- ☐ 3 years to less than 4 years
- ☐ 4 years or longer

4. How old were you when you first smoked shisha, or even tried a puff?

- ☐ 14 years old or younger
- ☐ 15–16 years old
- ☐ 17–18 years old
- ☐ 19–20 years old
- ☐ 21–22 years old
- ☐ 23 years old or older

5. Do your parents smoke shisha?

- ☐ Both parents had never smoked
- ☐ One parent is a former smoker and the other had never smoked
- ☐ Both parents are former smokers
- ☐ One parent is a current smoker and the other had never smoked
- ☐ One parent is a current smoker and the other is a former smoker
- ☐ Both parents are current smokers

6. **Do your parents know that you smoke shisha?**

- ☐ My mother knows
- ☐ My father knows
- ☐ Both of my parents know
- ☐ None of my parents know

7. Do you currently smoke cigarettes?

☐ Yes
☐ No

8. Do you consider yourself "hooked" on smoking shisha?

☐ Yes
☐ No

SECTION TWO: Questions Related to Water-pipe Tobacco Smoking Experience

11: Here we briefly describe some people. Please read each description and think about how much these people are or are not like you according to the following scale: (1) "Not like me at all" to (6) "very much like me". Tick (✓) only ONE answer for each statement.

HOW MUCH LIKE YOU ARE THESE PEOPLE?	Not like me at all	Not like me	A little like me Somewhat like me	Like me	Very much like me
• Being creative is important to them.	☐	☐	☐	☐	☐
• It is important to them to form their own opinions and have original ideas.	☐	☐	☐	☐	☐
• Learning things for themselves and improving their abilities is important to them.	☐	☐	☐	☐	☐
• It is important to them to make their own decisions about their life.	☐	☐	☐	☐	☐
• Doing everything independently is important to them.	☐	☐	☐	☐	☐
• Freedom to choose what they do is important to them.	☐	☐	☐	☐	☐
• They are always looking for different kinds of things to do.	☐	☐	☐	☐	☐
• Excitement in life is important to them.	☐	☐	☐	☐	☐
• They think it is important to have all sorts of new experiences.	☐	☐	☐	☐	☐
• Having a good time is important to them.	☐	☐	☐	☐	☐
• Enjoying life's pleasures is important to them.	☐	☐	☐	☐	☐
• They take advantage of every opportunity to have fun.	☐	☐	☐	☐	☐
• They avoid anything that might endanger their safety.	☐	☐	☐	☐	☐
• Their personal security is extremely important to them.	☐	☐	☐	☐	☐
• It is important to them to live in secure surroundings.	☐	☐	☐	☐	☐
• It is important to them that their country protects itself against all threats.	☐	☐	☐	☐	☐
• They want the state to be strong so it can defend its citizens.	☐	☐	☐	☐	☐

• Having order and stability in society is important to them.	☐	☐	☐	☐	☐
• It is important to them to maintain traditional values or beliefs.	☐	☐	☐	☐	☐
• Following their family's customs or the customs of a religion is important to them.	☐	☐	☐	☐	☐
• They strongly value the traditional practices of their culture.	☐	☐	☐	☐	☐
• They believe they should always do what people in authority say.	☐	☐	☐	☐	☐
• It is important to them to follow rules even when no one is watching.	☐	☐	☐	☐	☐
• Obeying all the laws is important to them.	☐	☐	☐	☐	☐
• It is important to them to avoid upsetting other people.	☐	☐	☐	☐	☐
• They think it is important never to be annoying to anyone.	☐	☐	☐	☐	☐
• They always try to be considerate and avoid irritating people.	☐	☐	☐	☐	☐

12: Read each of the following statements carefully and indicate whether you agree or disagree with the statements according to the following scale: (1) is "Completely not true" to (5) "Completely true". <u>Tick (✓) only ONE answer for each statement.</u>

	Completely not true (1)	**Somewhat not true (2)**	**Neutral (3)**	**Somewhat true (4)**	**Completely true (5)**
• My mother and I are interested in each other's opinion on shisha smoking	☐	☐	☐	☐	☐
• My mother and I can easily communicate about my view on shisha smoking	☐	☐	☐	☐	☐
• Whenever my mother and I discuss shisha smoking we both feel at ease	☐	☐	☐	☐	☐
• Whenever my mother and I discuss shisha smoking I have the feeling that she is dishonest/ unreasonable	☐	☐	☐	☐	☐
• Whenever my mother and I discuss shisha smoking I feel she understands me	☐	☐	☐	☐	☐
• Whenever my mother and I discuss shisha smoking she takes me seriously	☐	☐	☐	☐	☐
• My father and I are interested in each other's opinion on shisha smoking	☐	☐	☐	☐	☐
• My father and I can easily communicate about my view on shisha smoking	☐	☐	☐	☐	☐
• Whenever my father and I discuss shisha smoking we both feel at ease	☐	☐	☐	☐	☐
• Whenever my father and I discuss shisha smoking I have the feeling that	☐	☐	☐	☐	☐

he is dishonest/ unreasonable					
• Whenever my father and I discuss shisha smoking I feel he understands me	☐	☐	☐	☐	☐
• Whenever my father and I discuss shisha smoking he takes me seriously	☐	☐	☐	☐	☐

13. The following statements measure your relationship with your friends. Using the following scale where (1) "None or almost none" to (5) "All or almost all", Tick (✓) only ONE answer for each statement.

How many of your friends smoke shisha?					
	None or almost none (1)	**Less than half (2)**	**Exactly half (3)**	**More than half (4)**	**All or almost all (5)**
• Friends you've known the longest	☐	☐	☐	☐	☐
• Friends most often associated with	☐	☐	☐	☐	☐
• Best friends	☐	☐	☐	☐	☐

14. To what degree would the following significant others approve/disapprove you smoking shisha? Using the following scale where (1) "Strongly disapprove" to (5) "Strongly approve", Tick (✓) only ONE answer for each statement.

	Strongly Disapprove (1)	**Disapprove (2)**	**Sometimes Disapprove (3)**	**Sometimes Approve (4)**	**Strongly Approve (5)**
• Father	☐	☐	☐	☐	☐
• Mother	☐	☐	☐	☐	☐
• Friends	☐	☐	☐	☐	☐
• Best Friends	☐	☐	☐	☐	☐

15. Read each of the following statements carefully and indicate whether agree or disagree with these statements according to the following scale: (1) is "Not at all like me" to (5) "Extremely like me". Tick (✓) only ONE answer for each statement.

	Not at all like me (1)	**Slightly like me (2)**	**Moderately like me (3)**	**Like me (4)**	**Extremely like me (5)**
• I worry about what other people will think of me even when I know it doesn't make any difference.	☐	☐	☐	☐	☐
• I am unconcerned even if I know people are forming an unfavourable impression of me.	☐	☐	☐	☐	☐
• I am frequently afraid of other people noticing my shortcomings.	☐	☐	☐	☐	☐
• I rarely worry about what kind of impression I am making on someone.	☐	☐	☐	☐	☐

• I am afraid others will not approve of me.	☐	☐	☐	☐	☐
• I am afraid that people will find fault with me.	☐	☐	☐	☐	☐
• Other people's opinions of me do not bother me.	☐	☐	☐	☐	☐
• When I am talking to someone, I worry about what they may be thinking about me.	☐	☐	☐	☐	☐
• I am usually worried about what kind of impression I make.	☐	☐	☐	☐	☐
• If I know someone is judging me, it has little effect on me.	☐	☐	☐	☐	☐
• Sometimes I think I am too concerned with what other people think of me.	☐	☐	☐	☐	☐
• I often worry that I will say or do the wrong things.	☐	☐	☐	☐	☐

16. Read each of the following statements carefully and indicate whether you think these statements are true or not according to the following scale: (1) is "Not true at all" to (5) "Exactly true". Tick (✓) only ONE answer for each statement.

	Not true at all (1)	Slightly true (2)	Neutral (3)	Moderately true (4)	Exactly true (5)
• My faith involves all of my life	☐	☐	☐	☐	☐
• It does not matter so much what I believe as long as I lead a moral life	☐	☐	☐	☐	☐
• One should seek God's guidance when making important decisions	☐	☐	☐	☐	☐
• In my life, I experience the presence of God	☐	☐	☐	☐	☐
• I refuse to let religion influence everyday affairs	☐	☐	☐	☐	☐
• My faith sometimes restricts my actions	☐	☐	☐	☐	☐
• Nothing is as important as serving God	☐	☐	☐	☐	☐
• There are many more important things in life than religion	☐	☐	☐	☐	☐
• My religious beliefs lie behind my whole approach to life	☐	☐	☐	☐	☐
• I try hard to carry religion over into life's dealings	☐	☐	☐	☐	☐

17. The following question measures your attitude towards smoking shisha. Using the scale below from 1 (negative) to 7 (positive), please CIRCLE only ONE answer for each statement.

I think daily shisha smoking is:

Unpleasant	1	2	3	4	5	Pleasant
Harmful	1	2	3	4	5	Innocent
Useless	1	2	3	4	5	Useful
Boring	1	2	3	4	5	Exciting
Hazardous	1	2	3	4	5	Harmless

Unhealthy	1	2	3	4	5	Healthy
Bad	1	2	3	4	5	Good

18. The following statements measure your future intention to smoke shisha. Use the following scale: (1) is "Very Likely" to (5) "Extremely Not Likely". Tick (✓) only ONE answer for each statement.

	Extremely Unlikely (1)	Unlikely (2)	Neutral (3)	Likely (4)	Extremely likely (5)
• I expect that I will have enough determination in the future to quit smoking shisha	☐	☐	☐	☐	☐
• Having strong determination will enable me to quit smoking shisha	☐	☐	☐	☐	☐

19. **The following statements measure your future intention to smoke shisha. Use the following scale: (1) is "Definitely not" to (5) "Definitely yes". Tick (✓) only ONE answer for each statement.**

	Definitely Not (1)	Probably Not (2)	Neutral (3)	Probably Yes (4)	Definitely Yes (5)
• I intend to smoke shisha (or continue to smoke)	☐	☐	☐	☐	☐
• I intend to smoke shisha with my friends	☐	☐	☐	☐	☐
• I intend to smoke shisha with my parents	☐	☐	☐	☐	☐
• I intend to smoke shisha within 6 months	☐	☐	☐	☐	☐
• I intend to smoke shisha within 2 years	☐	☐	☐	☐	☐

SECTION THREE: Personal Details

20. Age:

- ☐ 18-21
- ☐ 22-25
- ☐ 26-29
- ☐ 30 – 33
- ☐ 34 or above

21.Highest Completed Level of Education:

- ☐ Illiterate
- ☐ Elementary School
- ☐ High School
- ☐ College Degree
- ☐ Post Graduate Degree
- ☐ Other: _____

22.Gender:

- ☐ Female
- ☐ Male

23.City of residence:

- ☐ Cairo
- ☐ Alexandria
- ☐ Other: _____

24.Marital Status:

25.Number of Children:

- ☐ Single
- ☐ Married
- ☐ Divorced or Separated
- ☐ Widowed

- ☐ None
- ☐ One
- ☐ Two
- ☐ More than two children

26.Religion:

- ☐ Muslim
- ☐ Christian
- ☐ Prefer not to say
- ☐ Other:_____

27.Current job status:

- ☐ Unemployed
- ☐ Manager/Executives
- ☐ Administrative
- ☐ Professionals
- ☐ Academics
- ☐ Self Employed
- ☐ Labourers
- ☐ Student
- ☐ Housewife
- ☐ Other:_____

28.Average Monthly Household income in Egyptian Pounds:

- ☐ Less than 2,000
- ☐ 2,000 – less than 5,000
- ☐ 5,000 – less than 10,000
- ☐ Over 10,000

Thank you for your time and cooperation

Appendix H: Descriptive Figures for Respondent Profile of the Questionnaire

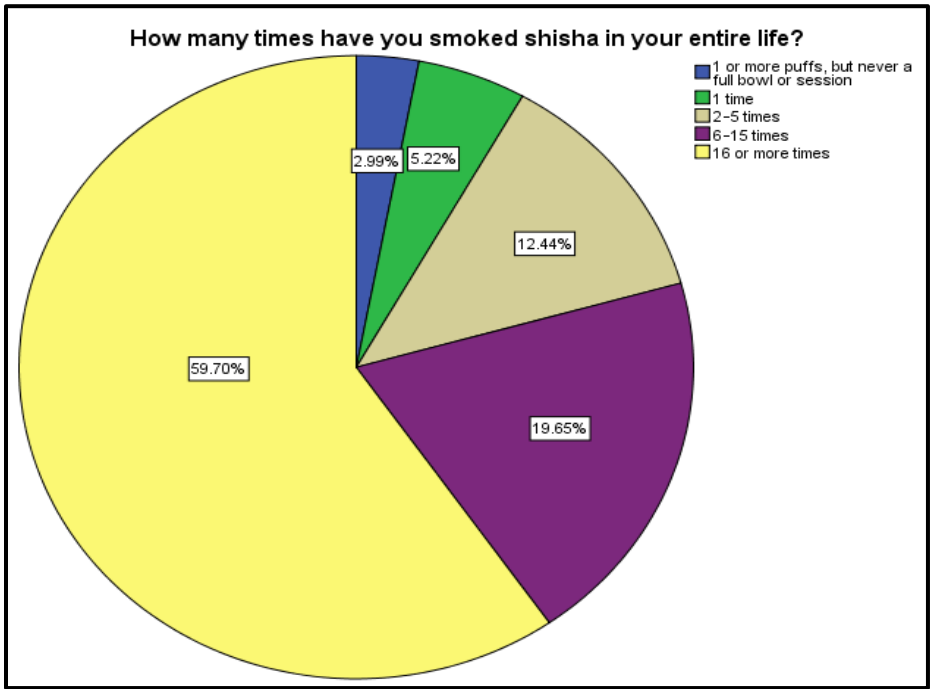

Figure 5-7: Frequency of Smoking in Entire Life

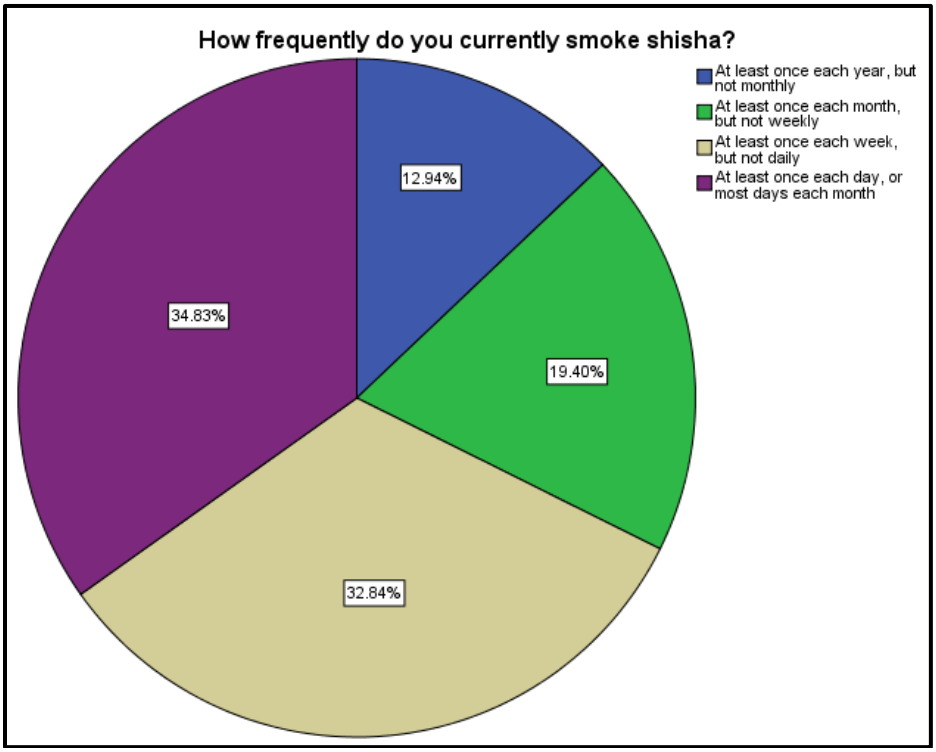

Figure 5-8: Current Frequency of Smoking

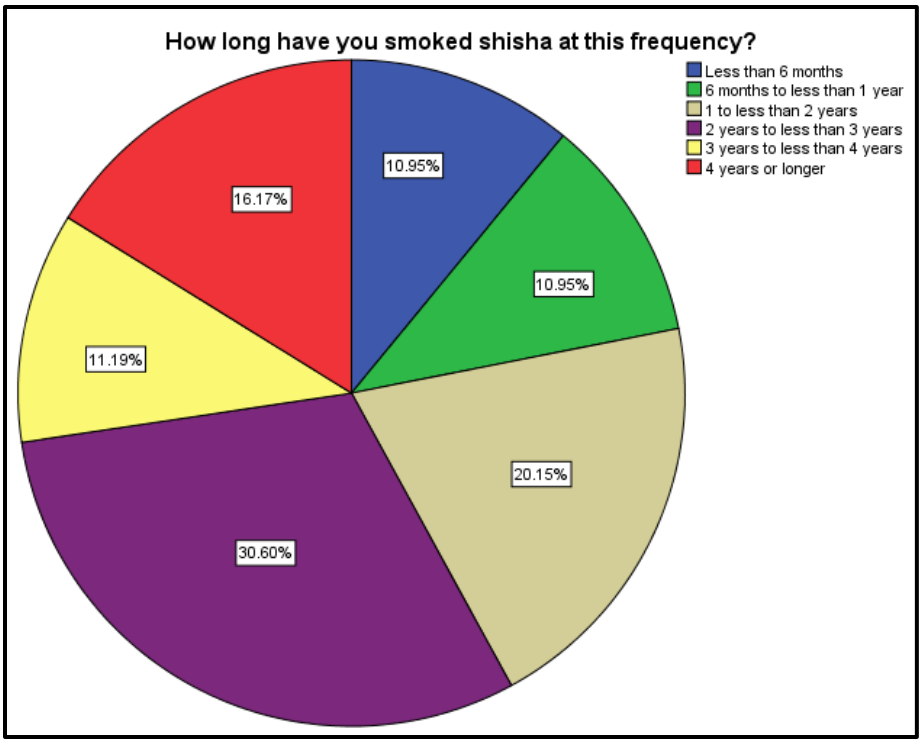

Figure 5-9: Current Duration of Smoking

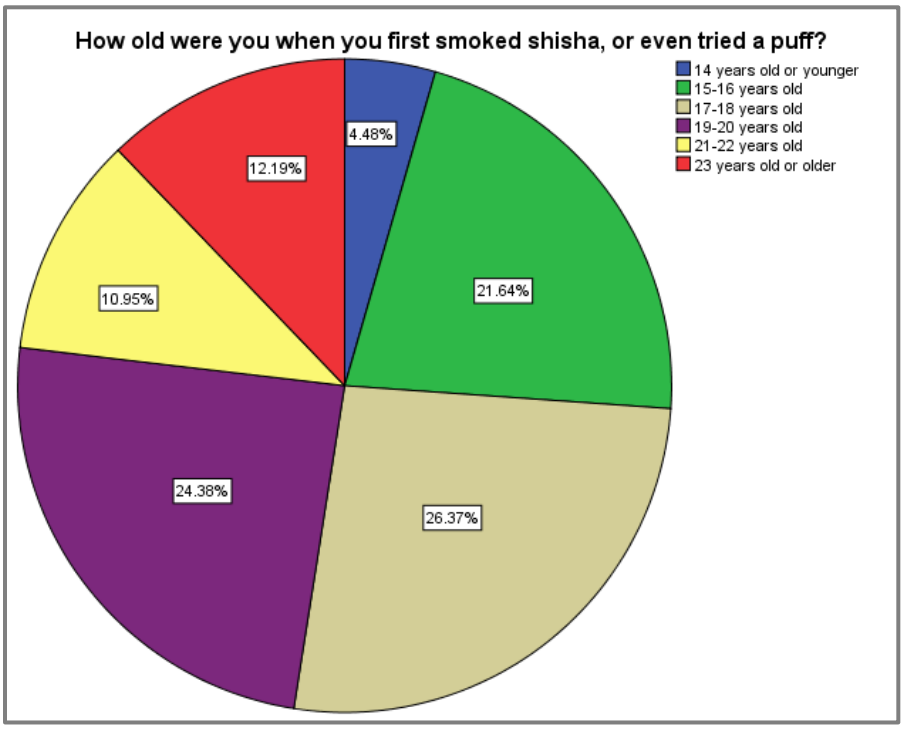

Figure 5-10: Frequency of Age Group of Smoking

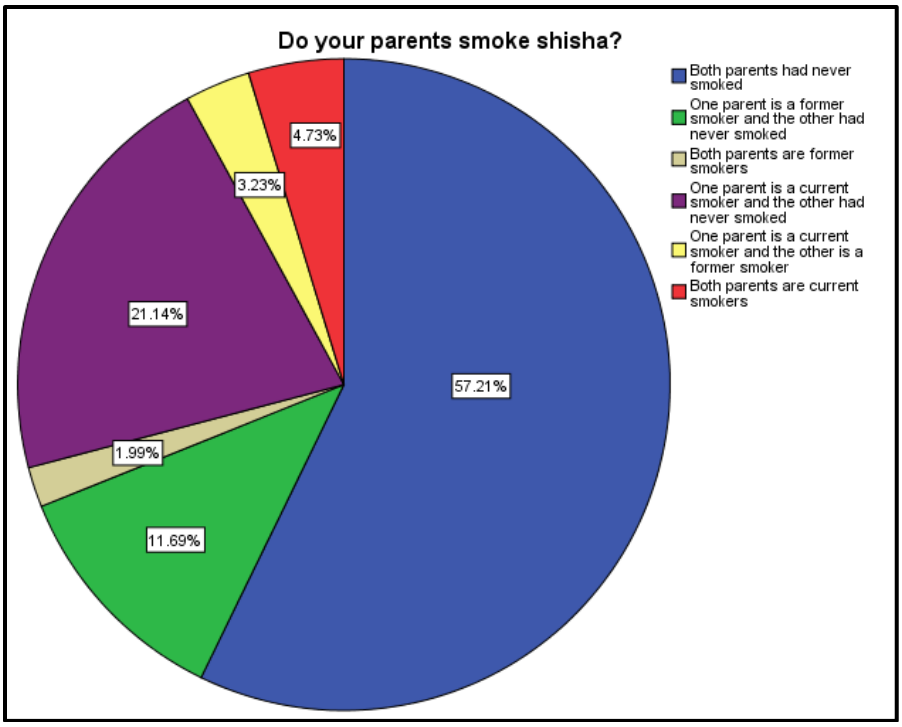

Figure 5-11: Frequency of Parents' Smoking

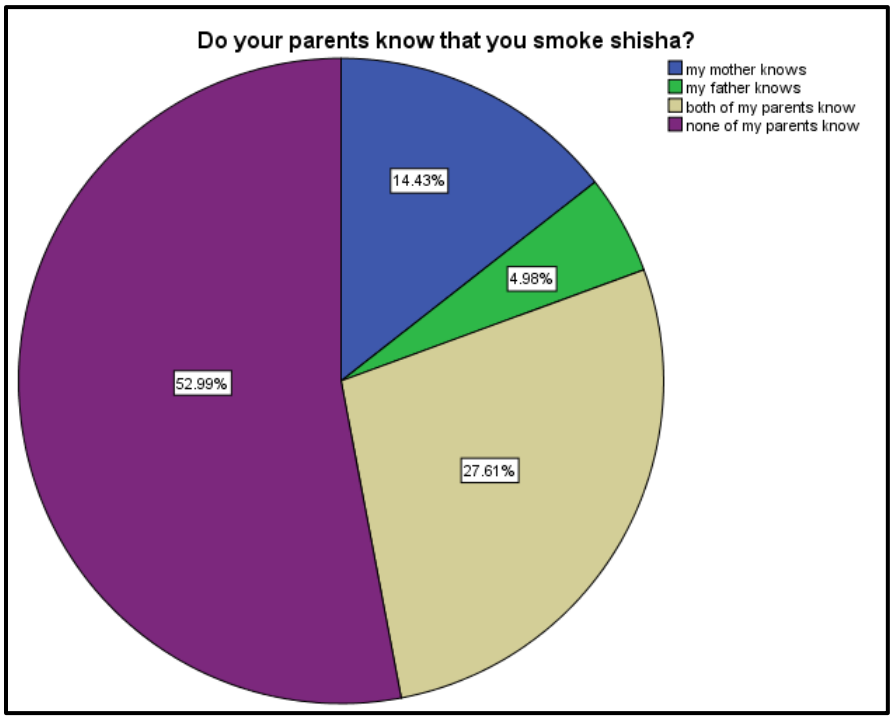

Figure 5-12: Frequency of Parents' Knowledge of Smoking

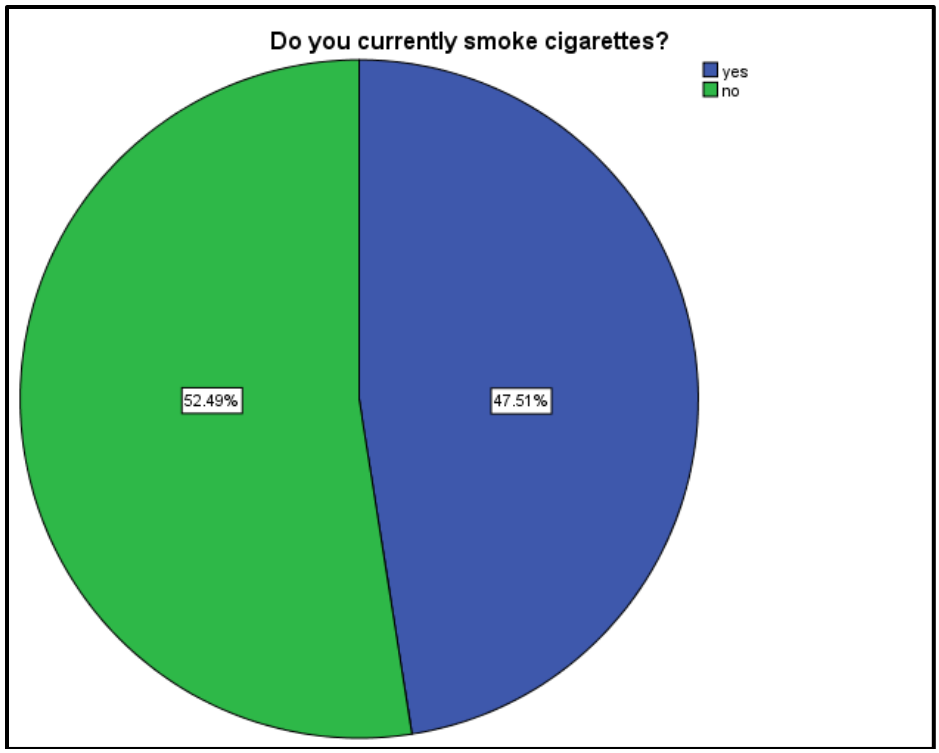

Figure 5-13: Frequency of Cigarette Smoking

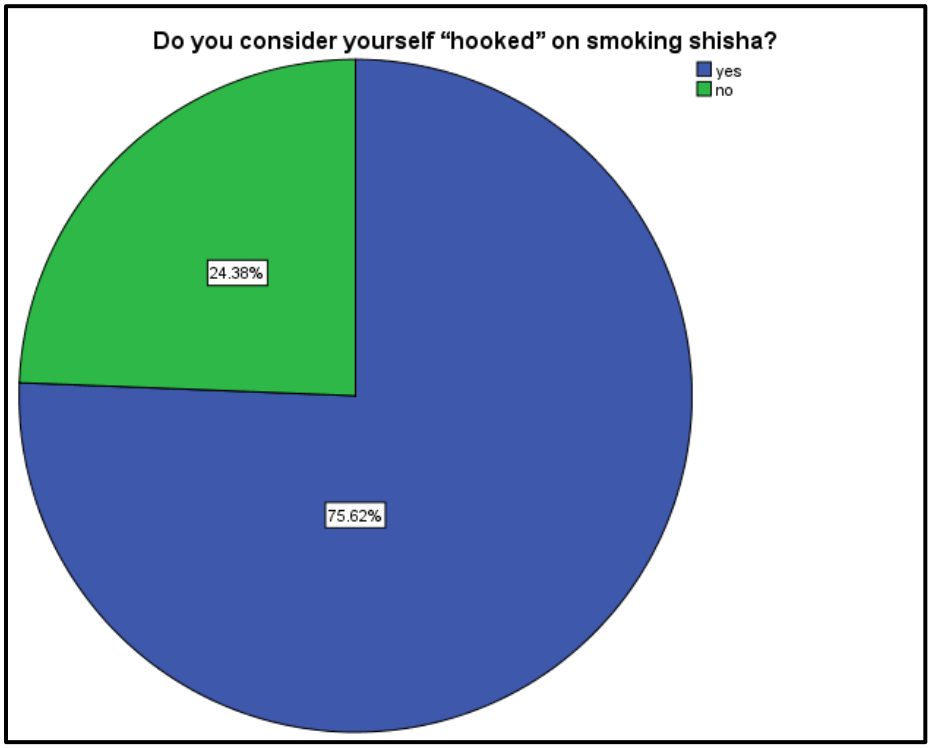

Figure 5-14: Frequency of Being Hooked on Smoking

Appendix I: Demographics Figures

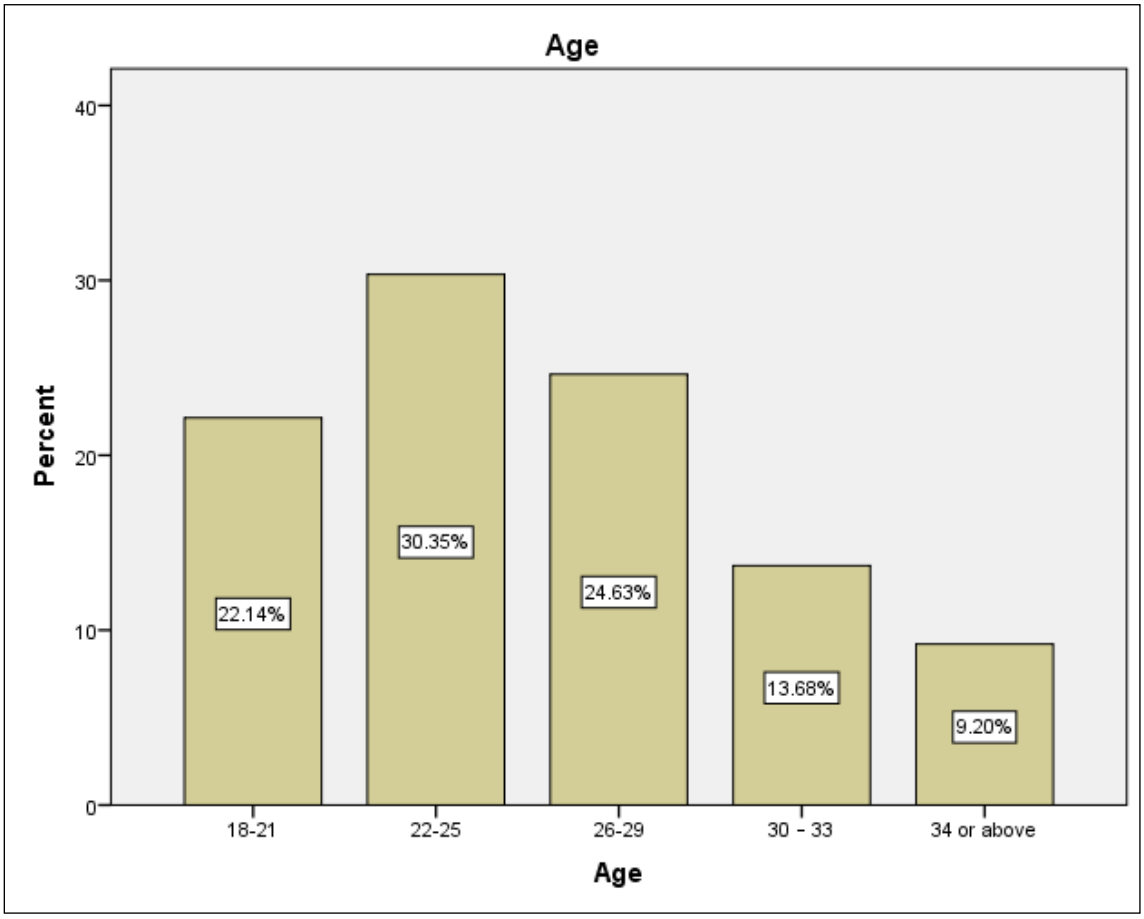

Figure G- 1: Current Age Groups

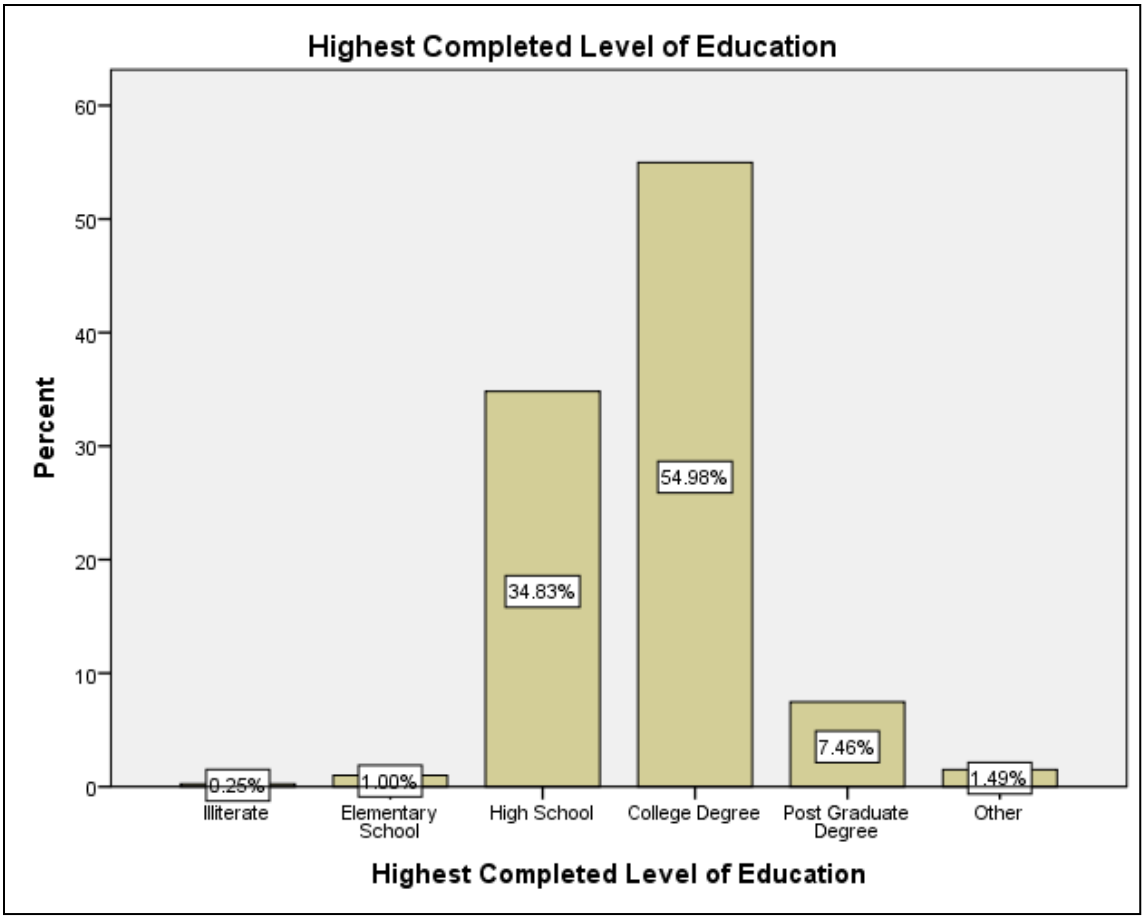

Figure G- 2: Education Level

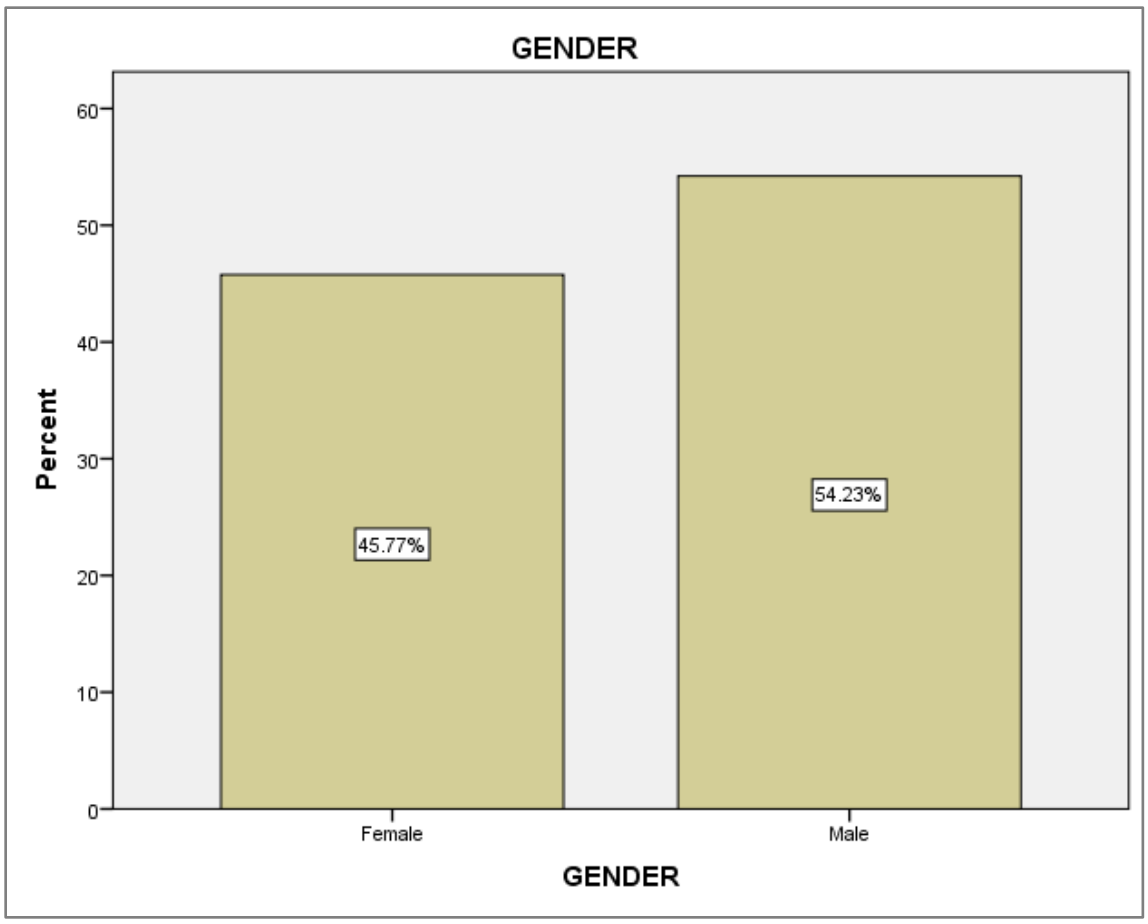

Figure G- 3: Gender Differences

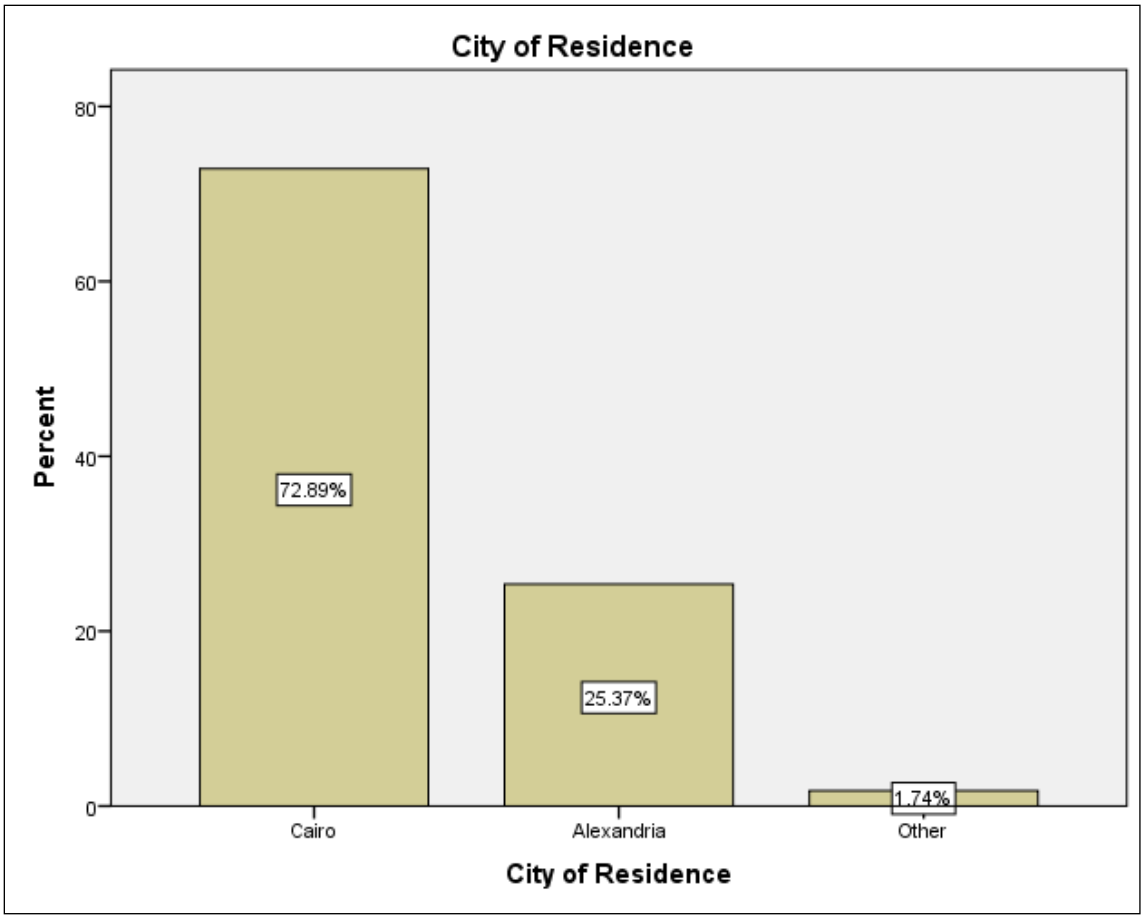

Figure G- 4: City of Residence

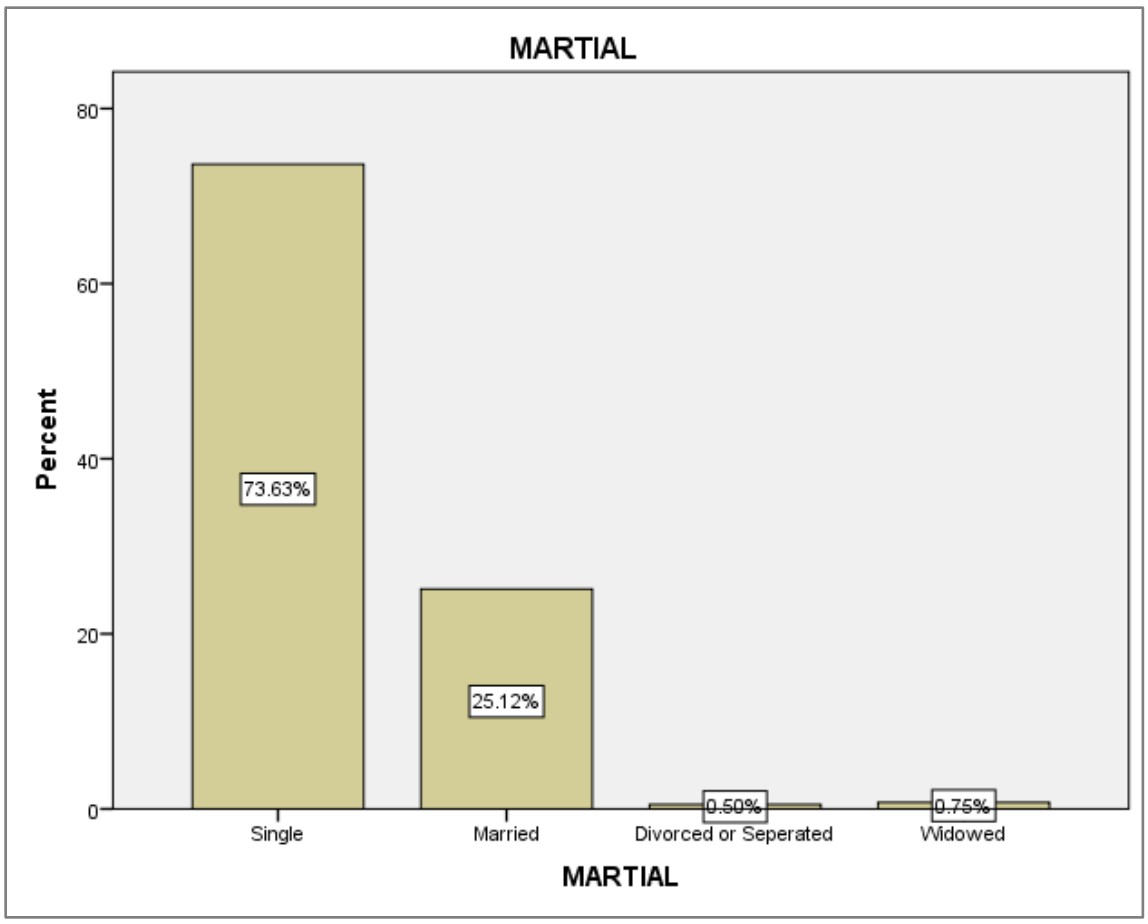

Figure G- 5: Marital Status

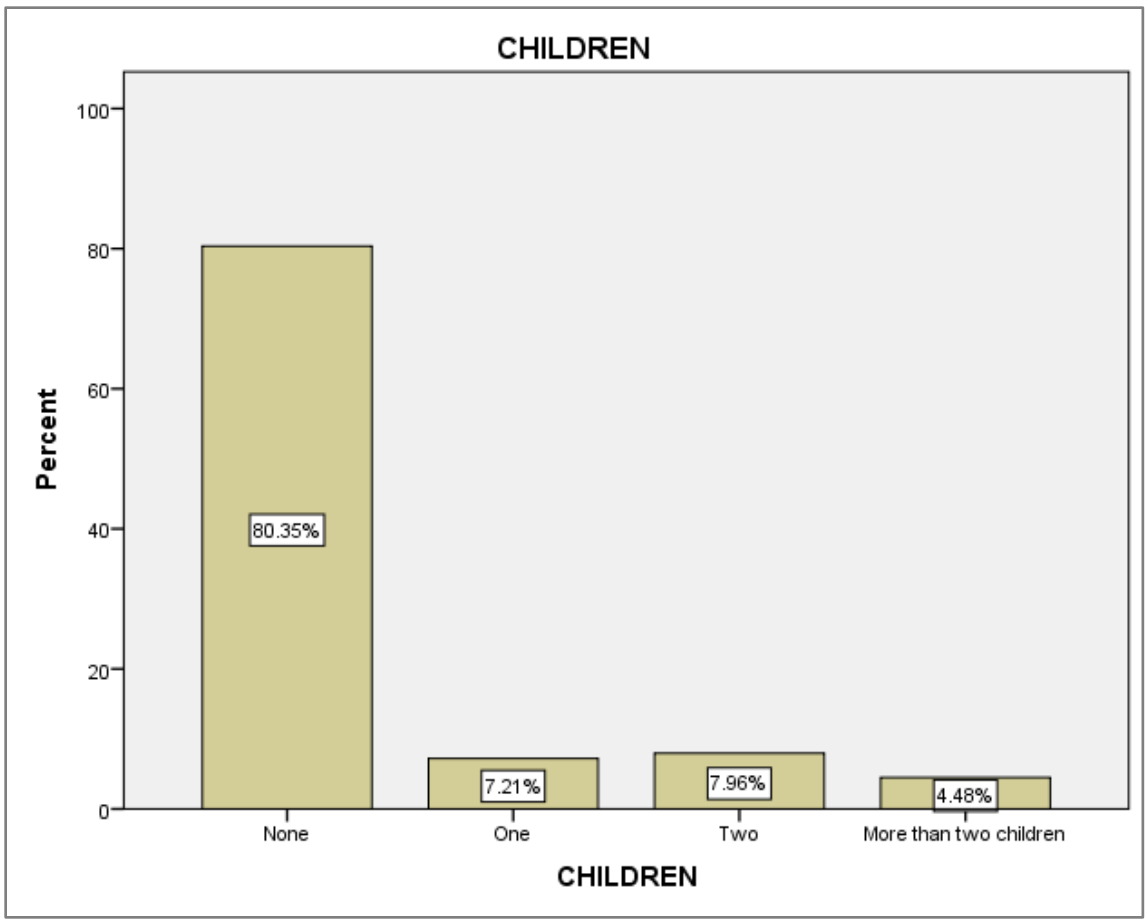

Figure G- 6: Number of Children

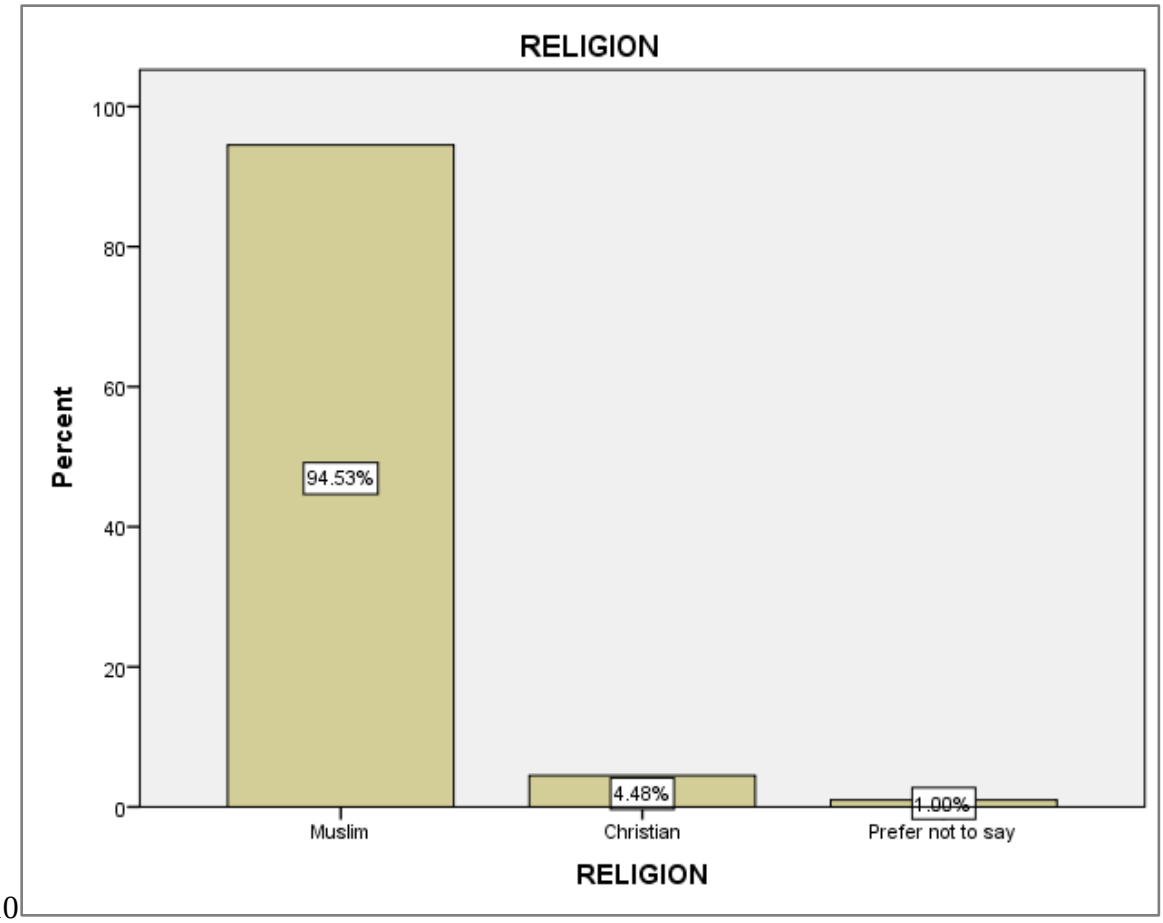

Figure G- 7: Religion Groups

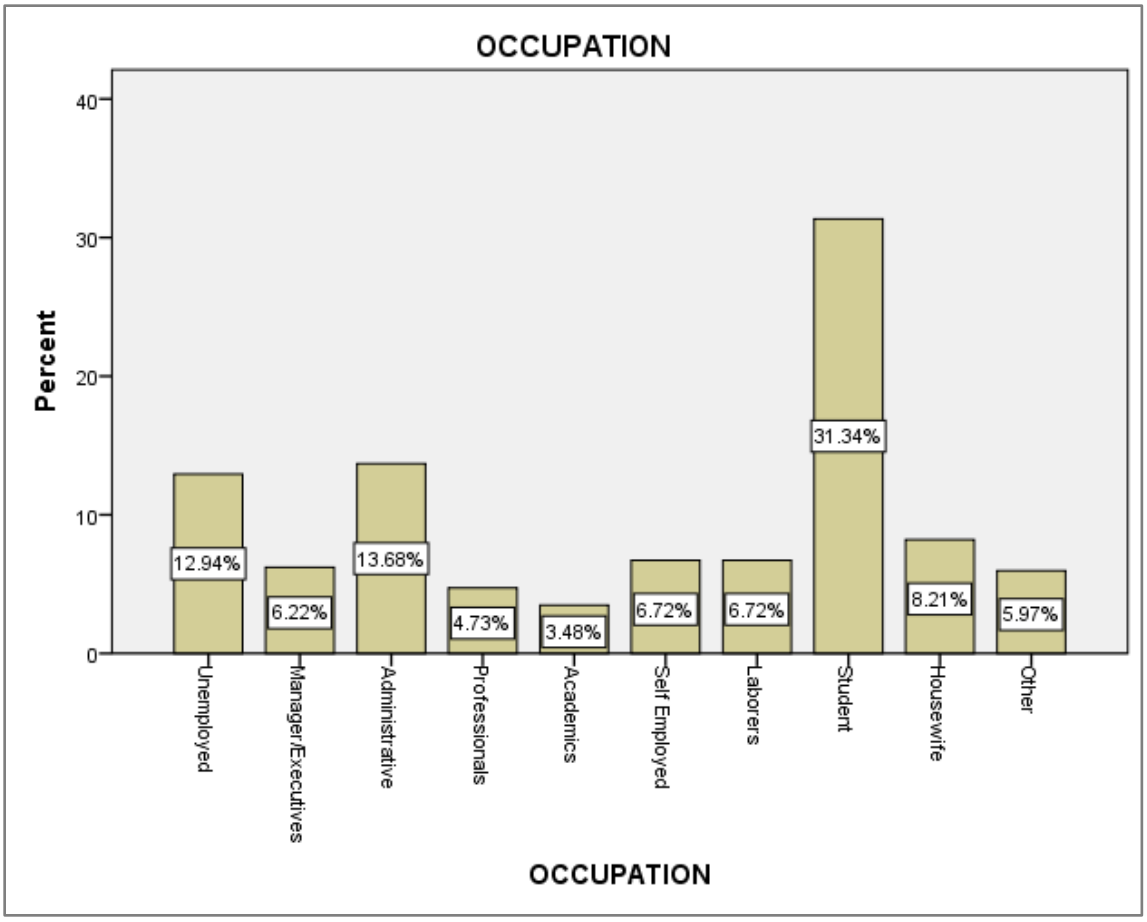

Figure G- 8: Job Status

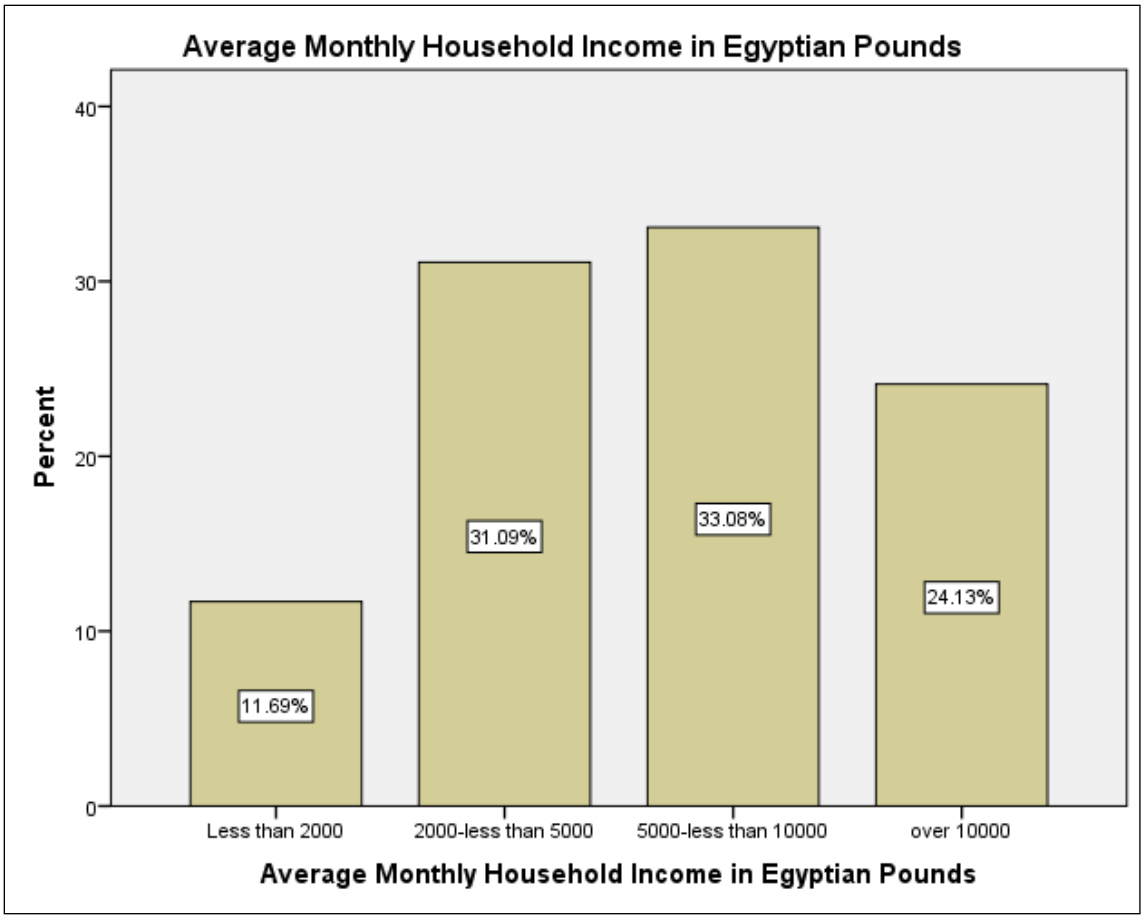

Figure G- 9: Frequency of Income